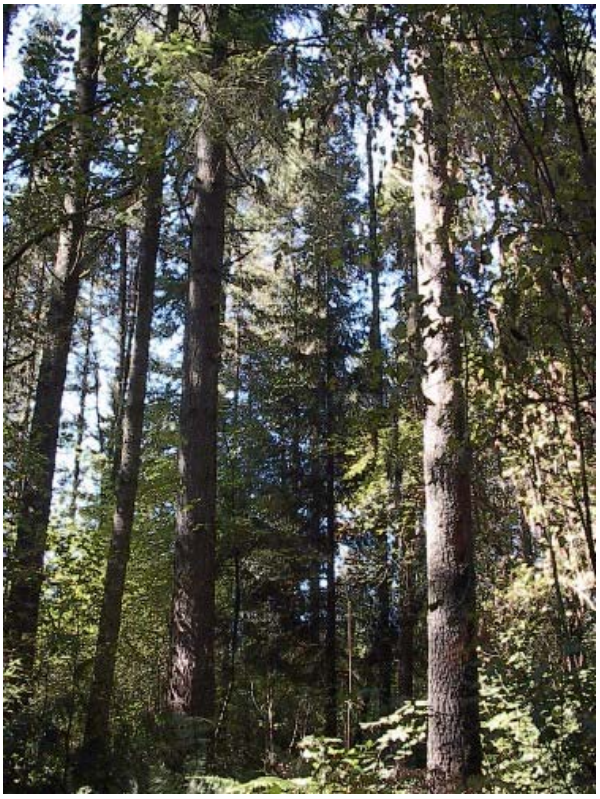
TAGSHINNY TREE FARM
CONSERVATION PLAN



For the Issuance of Enhancement of Survival and Incidental Take Permits
Under Section 10(a)(1) of the Endangered Species Act
for the
TAGSHINNY TREE FARM
Tom and Sherry Fox
Tree Management Plus, Inc.
Gary Davis
Jim and Tricia Murphy

September 2003

Title Page:

Permittee[1]**:**

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U.S. Fish and Wildlife Service
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Legal Authority:

For issuance of Enhancement of Survival Permits and approval of Safe Harbor Agreements and Candidate Conservation Agreements with assurances by the U.S. Fish and Wildlife Service: the Endangered Species Act of 1973, as amended, Section 10(a)1(A), as implemented through 50 CFR17.32 (b)(1) and 17.22(b)(1)

For issuance of Incidental Take Permits with assurances and approval of Low-effect Habitat Conservation Plans by the National Marine Fisheries Service: the Endangered Species Act of 1973, as amended, Section 10(a)1(B) as implemented through 50 CFR 222.307

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[1]The five parcels are owned in a number of combinations. Tree Management Plus, Inc. owns the Highway 12 and Winter Road parcels. 60 acres of the Kinzie Road parcel is owned 75% by Tree Management Plus, Inc. and 25% by Gary Davis, as tenants in common; the other 7 acres is owned by Tree Management Plus. The Burchett Road parcel is owned by Tree Management Plus and Jim and Patricia Murphy as a 50-50 tenancy in common. The Home parcel is owned by Tom and Sherry Fox, except for 7 acres owned by Tree Management Plus.

SUMMARY

The Permittee has proposed to manage five parcels of forestland totaling 144 acres in Lewis County, Washington, according to the measures set forth in this document. This document comprises a Safe Harbor Agreement (SHA) and Candidate Conservation Agreement with Assurances (CCAA) with respect to species within the jurisdiction of the U.S. Fish and Wildlife Service (FWS) and a Low-effect Habitat Conservation Plan with respect to species within the jurisdiction of the National Marine Fisheries Service of the National Oceanographic and Atmospheric Administration ("NOAA - Fisheries"). For ease of reference, this document refers to the Tagshinny Conservation Plan (or just the "Plan"), but reference to it as a "plan" is not intended to alter the function of the document as an agreement (i.e., as an SHA and CCAA with respect to the FWS).

The Plan describes the habitat enhancement activities and conservation efforts associated with forest management to be implemented by the Permittee that will benefit 17 species of fish and wildlife. All parcels covered by the Plan will be managed with prescriptive measures aimed to conserve and enhance habitat features while maintaining the economic viability of the Tagshinny Tree Farm and its owners. Habitat will be conserved, developed, and enhanced by retaining green wildlife trees and standing dead trees on timber harvest units through the development and retention of mature riparian forests with well-developed understories adjacent to wetlands and streams, and by reforestation of harvested lands to fully stocked stands of conifer, in addition to the currently existing stands of mature timber on the Permittee's property. Each parcel covered by the Plan currently provides habitat for a variety of wildlife species and one or more parcels may reasonably be expected to be occupied by other species in the future. The Permittee seeks regulatory assurances from the FWS and NOAA-Fisheries (referred to together as the "Services"), as provided under the Endangered Species Act (ESA). Assurances are possible through the issuance of Enhancement of Survival Permits (by FWS) under § 10(a)(1)(A) of the ESA and an Incidental Take Permit (by NOAA - Fisheries) under § 10(a)(1)(B) of the ESA which are supported by this Plan and the Permittee's commitment, as set forth below, to implement the provisions contained herein for an 80 year Plan and permit term.

The mature forests on the parcels covered by the Plan are dominated primarily by Douglas-fir (*Pseudotsuga menziesii*) and lodgepole pine (*Pinus contorta*). Less prominent native species include western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), and several hardwood species, Oregon ash (*Fraxinus latifolia*), quaking aspen (*Populus tremuloides*), red alder (*Alnus rubra*), black cottonwood (*Populus trichocarpa*), and bitter cherry (*Prunus emarginata*). Four of the five parcels were partially harvested prior to acquisition of the parcels by the Permittee. There is one potential fish-bearing seasonal stream located on one of the parcels with maturing hardwood and conifer canopy and understory vegetation providing riparian functions.

Under the FWS' regulations and safe harbor policy, the baseline conditions in a safe harbor agreement may be expressed in terms of numbers of animals, numbers and distribution of animals, and/or amounts of habitat. The metric employed in this Plan is habitat for the species covered by the safe harbor aspect of the Plan. The baseline in this Plan for listed species that use forested

habitat is best measured by using the amount of forest age-class of trees over 40 years old as a surrogate for habitat quality on all five parcels combined (144 acres). Forests over 40 years old serve as a reasonable starting point for providing the complex structure necessary to meet the conservation needs of numerous listed and unlisted species known to occur in and around the Tagshinny Tree Farm. Many landowners routinely harvest their forests when they are approximately 40 years old because they are concerned about regulatory restrictions that could result if listed species such as northern spotted owls or bald eagles occupy their forests. The safe harbor and incidental take baseline for covered species that use aquatic (stream and wetland) habitats is best measured by the ability of the riparian habitat to moderate water temperatures and microclimate, filter sediments, and to contribute in-stream structure adult and juvenile salmon rearing habitats for one or more species life-stages.

Forested habitat characteristics on the individual parcels are highly variable. Forest cover of trees greater than 40 years old ranges from approximately 15 to 100 percent of each parcel. Collectively, the current amount of forest stands older than 40 years on the Tagshinny Tree Farm is 25% (33 acres). This drops to 19% and 20% in the third and fourth decades, respectively, although this acreage will be older and constitute higher quality habitat than that extant at the outset of the Plan. Thus, the safe harbor baseline for this Plan is 19% of forest age class 40 years or older; 2% of which must be 80+ years old. During the middle of the Plan term, approximately 76% (101 acres) of the forested ownership will be over 40 years old, and at the end of the 80-year Plan term, approximately 26% (35 acres) will be over 40 years old.

The current condition of the riparian habitat adjacent to the potentially fish-bearing stream consists mostly of small clumps of hardwoods and thick understory brush. Conifers approximately 8 years old have been planted within 30 feet of the stream. Through active management, it is expected that the riparian habitat will develop into a mix of hardwoods and conifers that will provide sufficient shade for the stream, a source for down logs for structure and for organic matter, and the ability to filter the low levels of sediment generated by management activities on adjacent harvest units. The safe harbor baseline for the riparian zone adjacent to the potentially fish-bearing stream consists of 150 trees > 8"dbh, w/ a minimum of 8 conifers >16“dbh, per 1,000 feet of stream. This baseline is actually higher than that which is present today; it is the future condition that will be achieved through the management activities implemented under this Plan.

Forest management activities to be conducted on the Tagshinny Tree Farm include improving the health of the existing mature forest by pre-commercial and commercial thinning, pruning where practicable or necessary for reducing disease, and reforestation with a diverse group of tree species on harvested areas. Management activities under the plan are designed to protect, develop and enhance a diversity of habitats on the Permittee’s property that will benefit the covered species, and minimize the impacts of these activities on covered species.

The conservation measures for the Tagshinny Tree Farm were designed to conserve and enhance habitat for 14 terrestrial vertebrate species, and three species of fish. Each of these species will be a “covered species” under the Plan and is included, as appropriate, in the permits issued and supported by this Conservation Plan. Specifically, the FWS expects to issue an Enhancement of Survival Permit covering species currently listed under the ESA (as addressed in the SHA) and covering proposed, candidate and other species of concern (as addressed in the CCAA). NOAA-Fisheries expects to issue an Incidental Take Permit for one species listed under the ESA plus one

species that is not currently listed. NOAA-Fisheries considers this Plan to be sufficient to support of issuance of an Incidental Take Permit and to serve as a Low-effect Habitat Conservation Plan. As such, this Plan in effect will serve as an Unlisted Species Agreement between NOAA-Fisheries and the Permittee, whereby NOAA-Fisheries commits to issue an Incidental Take Permit.

Listed species addressed by the Plan include: the threatened northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachyramphus marmoratus*), bald eagle (*Haliaeetus leucocephalus*), and Lower Columbia River steelhead (*Onchorynchus mykiss*). None of these listed species are currently known to be present on the Tagshinny Tree Farm, but Lower Columbia River steelhead are, however, expected to occupy a portion of the Plan area in the near future because of a recent removal of a downstream fish passage barrier.

Thirteen unlisted species are addressed by the Plan. These include; Federal candidate species Lower Columbia River/SW Washington coho and salmon (*O. kisutch*), Oregon spotted frog (*Rana pretiosa*) and the coastal cutthroat trout (*O. clarki clarki*). The remaining species are considered species of concern by the Western Washington Fish and Wildlife Office, including the northwestern pond turtle (*Clemmys mamorata*), great blue heron (*Ardea herodias*), pileated woodpecker (*Dryocopus pileatus*), osprey (*Pandion haliaetus*), northern goshawk (*Accipiter gentilis*), olive-sided flycatcher (*Contopus borealis*), long-eared myotis *(Myotis evotis*), long-legged myotis (*Myotis volans*), Pacific Townsend's big-eared bat *(Corynorthinus townsendii*) and Van Dyke's salamander (*Plethodon vandykei*).

The Plan calls for monitoring of conservation measures and enhancement activities to ensure compliance with the Plan and associated permits, and to determine the effectiveness of the forest management activities in achieving habitat goals. The Permittee will submit a report to the Western Washington Fish and Wildlife Office and the NOAA - Fisheries Washington State Habitat Branch in Lacey, Washington, by March 31st of the year following the year when management activities are undertaken. The report will consist of information on timber management activities, biological information such as the status of any covered species observed on the ownership, and an assessment of the then current condition of the habitat on the Tagshinny Tree Farm.

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I. INTRODUCTION AND STRUCTURE OF CONSERVATION PLAN.

This Conservation Plan ("Plan") covers the 144-acre Tagshinny Tree Farm, which is comprised of five parcels owned in various combinations by Tom and Sherry Fox, Tree Management Plus, Inc., Gary Davis and Jim and Tricia Murphy. The ownership of the five parcels is identified in the Summary section above. The owners are hereinafter referred to both separately and collectively (as may be appropriate based on context) as the "Permittee". The parcels are identified in Appendix A hereto (see Section XVI below). The Tagshinny Tree Farm is sometimes referred to herein as the "covered lands" or lands "covered by" the Plan. This Plan only applies to the Tagshinny Tree Farm parcels identified in Appendix A. The Plan does not apply in any way to any other lands owned now or in the future by the Permittee (or any other of the individuals comprising the Permittee); nor does it apply to the Permittee's (or any of the individuals comprising the Permittee) activities on any other properties other than the ones identified in Appendix A.

The Permittee and the Services enter into the Conservation Plan set forth below in support of the Services' issuance of permits authorizing the incidental take that may arise from forest management activities on the Tagshinny Tree Farm that may affect the 17 species of fish and wildlife identified in Table 1 of Section II.G below. The Services have provided technical support in the preparation of this Plan.

This Plan combines into one integrated document three ESA Section 10 voluntary conservation planning tools that have been developed by the Services. While it is called, for the sake of simplicity, a "Plan", it also is an agreement between the Services and the Permittee, as described in more detail below. As such, the Plan contains certain rights and obligations of the Services and the Permittee.

Safe Harbor Agreement and Candidate Conservation Agreement. The Plan constitutes both a Safe Harbor Agreement ("SHA") and Candidate Conservation Agreement with Assurances ("CCAA") for the 15 covered species under the jurisdiction of the FWS. As such, it will support the application for an Enhancement of Survival Permit under ESA § 10(a)(1)(A) covering the covered species. The elements of this Plan that apply to the listed species under the jurisdiction of the FWS are considered by the FWS to constitute a SHA. The elements that apply to the unlisted species within the jurisdiction of the FWS are considered to be a CCAA. The species falling within the SHA are the northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachhyramphus marmoratus*), and bald eagle (*Haliaeetus leucocephalus*). The species addressed in the CCAA are the coastal cutthroat trout (*Oncorhrynchus clarki clarki*), Oregon spotted frog (*Rana pretiosa*), northern goshawk (*Accipiter gentilis*), olive-sided flycatcher (*Contoupus borealis*), long eared myotis (*Myotis evotis*), long legged myotis (*Myotis volans*), Pacific Townsend's big eared bat (*Corynorthunus townsendii*), Van Dyke's salamander (*Plethodon vandykiei*) and northwestern pond turtle (*Clemmys marmorata*), pileated woodpecker (*Dryocopus plieatus*), great blue heron (*Ardea herodias*) and osprey (*Pandion haliaeetus*).

Low-Effect Habitat Conservation Plan. This Plan also serves as a low-effect Habitat Conservation Plan to support the application for an Incidental Take Permit under ESA § 10(a)(1)(B) to cover the two (2) covered species under the jurisdiction of the NOAA - Fisheries.

One of the species -- the Lower Columbia River steelhead ESU (*Oncorhynchus mykiss*) -- is listed under the ESA and the other -- the Lower Columbia coho salmon ESU (*O. kisutch*) -- is not listed. NOAA-Fisheries will issue an Incidental Take Permit consistent with the terms of the Plan to cover these two species.

Permit Coverage. In all cases, the permits to be issued will identify and cover both the listed and unlisted species covered by the Plan within the Services' respective jurisdictions. The permits shall take effect as to listed species upon permit issuance. The permits shall take effect as to unlisted species upon listing of the species (and, in the case of the Lower Columbia coho salmon, the taking of effect of a "take prohibition"), without further action by the applicable Service.

The term of this Plan is 80 years. The parcels comprising the Tagshinny Tree Farm are identified (see maps, legal descriptions, and photos) in Appendix A (Section XVI) below. The forest management actions to be applied to the Tagshinny Tree Farm by the Permittee are expected to maintain the long-term economic viability of the forest management operations and provide better habitat conditions for the covered species. The conservation provided in this Plan is intended to improve habitat conditions by maintaining and enhancing habitat, minimizing the impacts of forest management activities to listed, proposed and candidate species, and species of concern, contribute to the recovery of the species in the wild and, if undertaken by other property owners similarly situated on the landscape, preclude the need to list the unlisted species in the future. Forest management activities are planned to enhance the health and vigor of the forest, reduce incidence of insect and disease in the forest, and enhance the structural characteristics of the forests to provide wildlife habitat for the species covered by the Plan, and other common wildlife species found on the Permittee's parcels. Through the Plan, forested habitat will be maintained for the species covered by the Plan for the next 80 years. This will occur in an environment where the lands surrounding the Tagshinny Tree Farm are increasingly being utilized for non-forest management activities. For example, within ½ mile of the Permittee's parcels (1/4 mile in some cases) are chicken farms, dairy farms and associated pastureland, as well as housing developments. Landowners in Lewis County near the major highways are continually being solicited to sell their lands for use in developing housing projects (See Appendix E in Section XVI for an example of development potential). The permits associated with this Plan will remove many of the regulatory disincentives associated with providing habitat for listed and declining species. Thus, the Permittee is more likely to keep its property in a forested condition, and will be less likely to convert the Tagshinny forest lands to other uses.

The Plan has been prepared in accordance with the regulations implementing the ESA. The final policies covering SHAs and CCAAs were published in the Federal Register on June 17, 1999 (64 FR 32717). While these policies are joint between the Services, only the FWS has promulgated regulations to implement these conservation tools under the ESA. For this reason, NOAA-Fisheries can currently only provide coverage through regulations for Habitat Conservation Plans (50 CFR 222.307(2)(b)).

SHAs provide assurances that allow a non-Federal landowner to alter or modify their property, even if such alteration or modification results in the incidental take of a listed species to such an extent that it returned the species or its habitat back to the originally agreed-upon baseline conditions. In addition, the landowner who commits to implement voluntary conservation

measures for listed species will receive assurances from the Services that additional conservation measures will not be required and additional land, water, or resource use restrictions will not be imposed should the species become more numerous as a result of the landowners' actions.

CCAAs provide assurances from the Services to non-Federal landowners that commit to implement conservation measures for a proposed or candidate species or a species likely to become a candidate or proposed in the near future, that additional conservation measures will not be required and additional land, water, or resource use restrictions will not be imposed should the species become listed in the future. These assurances run with the enrolled lands and are valid for as long as the participating landowner is complying with the agreements.

Low-effect HCPs are a special category of HCPs established by the Services to address planned activities with relatively minor or negligible impacts. The purpose of low-effect HCPs is to expedite processing and approving of HCPs for activities with inherently low impacts to the distribution, numbers of a species or the habitat-types they depend upon. Issuance of an Incidental Take Permit, supported by an HCP, is not explicitly required to recover listed species, but is expected to contribute to the long-term survival of the species. It is the practice and experience of the Services that contributions to recovery and benefits to species and their habitats are in fact an integral product of an HCP. As with the agreements described above, landowner who is implementing the terms and conditions of the HCP will receive assurances from NOAA-Fisheries that additional conservation measures will not be required and that additional land, water, or resource use restrictions will not be imposed. For purposes of this Plan, both listed and unlisted species (including distinct population segments (DPSs) and evolutionarily significant units (ESUs)) are considered to be covered by the Services' No Surprises Policy (63 Fed. Reg. 8859) and provide regulatory assurances should these ESUs, or future modifications thereof, require protection of listing under the ESA.

Monitoring to determine how the species are responding to the prescribed management activities is set forth in the Plan (see Section VII below). The Permittee will prepare an annual report (due the following March 31st) on the progress of implementing the enhancement activities during any year in when forest management activities are implemented. Reporting will cover compliance monitoring, information that demonstrates that the on-the-ground activities match the prescription proposed in the Plan, and that baseline conditions are being maintained.

II. PURPOSE AND NEED FOR THE PLAN

A. Background and Duration of the Plan

The five parcels of the 144-acre Tagshinny Tree Farm are up to 25 miles apart in central Lewis County, Washington (See Appendix A for Project Area Photos and Legal Descriptions). The nearest towns, Ethel, Toledo, and Winlock are 1.5 to 7 miles from the Home property. The Permittee manages the Tagshinny Tree Farm as a source of timber to harvest for economic purposes. Harvest of timber under the proposed action may result in incidental take, in part as a

result of the conservation measures proposed by the Permittee. Accordingly, Permittee wishes to obtain assurances from the Services, under the ESA, that Tagshinny. The Plan is proposed to be in effect for 80 years, but may be terminated earlier under Section IX below.

B. Regulatory and Planning Environment

Section 9 of the ESA prohibits the "take" of federally listed species of wildlife unless authorized under the provisions of sections 7, 10(a), or 4(d) of the ESA. Section 3 of the ESA defines take as "to harass, harm, pursue, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under the conditions of a Permit issued for an approved SHA, if the numbers or range of covered listed species is expected to increase because of voluntary conservation measures conducted in accordance with the SHA, the landowner would be authorized to incidentally "take" those covered species above the established baseline without penalty. Similarly, landowners would receive incidental take authorization in advance for covered unlisted species that may become listed in the future under a CCAA because they voluntarily provided conservation benefits prior to the listing of that species.

Federal regulation defines the terms "harass" and "harm" as follows. Harass means, "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering." Harm means "an act which actually kills or injures wildlife" and "may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering." "Harm", as defined by NOAA-Fisheries, means, an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding or sheltering (64 FR 60727).

Sections 2, 7, and 10 of the Endangered Species Act (Act) of 1973, as amended, allow the Services to enter into the agreements embodied in this Plan. Section 2 of the Act states that encouraging interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs is a key to safeguarding the Nation's heritage in fish, wildlife, and plants. Section 7 of the Act requires the Services to review programs that we administer and to utilize such programs in furtherance of the purposes of the Act. By entering into these agreements, the Services are utilizing their Candidate Conservation, Safe Harbor and Habitat Conservation Programs to further the conservation of the Nation's fish and wildlife. Lastly, section 10(a)(1) of the Act authorizes the issuance of permits to "enhance the survival" of a listed species or to allow for "incidental take" of listed species while conducting otherwise legal activities.

The section 10 permits associated with this Plan, will authorize the *incidental* take of listed species, including northern spotted owls, marbled murrelets, bald eagles, and steelhead. The section 10 Permits do not authorize *deliberate* take (e.g., deliberate killing) of these species. The Services believe that the primary effect on the covered species from the various forest management activities that are proposed for implementation on the Tagshinny Tree Farm, under this Plan, will be to disturb (harass) the species. Some harm through habitat degradation may also occur. Nevertheless, any

harassment or harm to listed species that may occur will not be the intent or purpose of these otherwise lawful forest management activities and therefore the activities will be covered by the permits; the Permittees and others authorized by them to undertake such covered activities will therefore not be subject to liability for take of the covered species.

In addition to being protected by the ESA, the northern spotted owl, marbled murrelet, and bald eagle are protected by the Migratory Bird Treaty Act of 1918, as amended (16 USC §703-712) (MBTA), and the Bald and Golden Eagle Protection Act of 1940, as amended (16 USC §668-668d) (BGEPA). It is FWS policy that an ESA § 10 permit for listed migratory birds is sufficient to relieve the permittee from liability under the MBTA and BGEPA. For the MBTA, this is accomplished by having the § 10 permit double as a Special Purpose Permit authorized under 50 CFR § 21.27. For the BGEPA, relief from liability is accomplished by utilizing the FWS' prosecutorial discretion (FWS would not prosecute an incidental take under the BGEPA if such take occurs as a result of activities conducted in compliance with an ESA section 10 permit).

The FWS and the NOAA-Fisheries are the two Federal agencies charged with overseeing administration of the ESA. Accordingly, these agencies are responsible for analyzing and making final determinations on ESA §10 applications. The FWS has been and remains the "lead agency" providing technical assistance to the Permittee in the Tagshinny Tree Farm § 10 application process.

Issuance of a section 10(a)(1) Permit is a Federal action as defined under the National Environmental Policy Act, 42 USC 4331, *et seq.* (NEPA) and its implementing regulations (40 CFR part 1500, *et seq.*). However, the Services expect most SHAs, CCAAs, and Low-effect HCPs and associated permits, will result in minor or negligible effects on other environmental values or resources, including federally listed species and their habitats. The Services have determined that most of these conservation plans will qualify for a categorical exclusion under the NEPA. The permit to be issued by FWS under this Plan is covered by a categorical exclusion under FWS procedures as provided by 516 DM 2, Appendix 1and 516 DM 6, Appendix 1. For NOAA-Fisheries, the permit supported by this Plan also is considered to be within the scope of the categorical exclusion as provided through National Oceanic and Atmospheric Administration Administrative Order 216-6 (May 20, 1999), sections 5.05(a)-(d) and other pertinent sections.

Issuance of a permit is a federal action that triggers consultation under section (7)(a)(2) of the ESA. A product of that consultation are the Services' Biological Opinions that analyze the effects of covered activities and conservation measures on listed species and their habitats. These opinions may also analyze the effects of activities and measures on unlisted species that, together with a Conservation Plan, can serve as an Unlisted Species Agreement that provides long-term regulatory assurances to the Permittee. The Biological Opinions must find, or lead to a finding, of "no-jeopardy" as a pre-condition for issuance of take permits.

The potential taking under the Plan, as a result of forest management activities implemented by the Permittee, could occur in habitat suitable for occupancy by covered species. Take could potentially be in the form of disturbance and/or habitat degradation (down to baseline conditions under the SHA). Pursuant to Section 10(a)(1), the Permittee has submitted the draft Plan and Permit applications to the Services. For the FWS, the SHA, which is a requirement of Permit issuance,

estimates the level of take expected to occur during proposed activities, and specifies how the impacts of the taking during timber harvesting and other associated activities will occur in the process of enhancing habitat for listed species. For NOAA-Fisheries, the Plan, in total, includes a suite of measures that will serve to avoid and minimize take of covered species and to conserve their habitats.

The Permittee also desires protection from the take prohibitions of the ESA for covered species that are not currently listed under the ESA, in the event that these species are listed by the Services during the Plan term. For the FWS, the CCAA in the Plan and associated Permit, address unlisted species. For NOAA-Fisheries, the Plan includes a suite of measures that will serve to avoid and minimize take of listed species and to address unlisted species by conserving their habitats should they be listed. At present, neither listed or unlisted species under NOAA-Fisheries jurisdiction occupy habitats in the Plan area but are anticipated to be present in the near future since the anadromous fish passage barrier downstream has been recently removed (by a third party (see Appendix F for a description of the project).

C. Alternatives Considered

The Permittee has been engaged in the development of this Plan since 1997. In that time a series of alternative management strategies have been considered for the properties that comprise the Tagshinny Tree Farm.

One alternative is for the Permittee to follow standard state forest practice rules. Recently revised Washington State Forest Practice Rules, known as Forests and Fish rules, require commitment of resources and land area that significantly limit the Permittee's economic viability.

Alternatively, the Permittee could have chosen to develop one or more parcels for housing or commercial purposes. This alternative would provide a greater return on their investments but would have taken the land out of forestry and compromised many species' habitats.

Thus, the Permittee has chosen to retain these lands in long-term forestry and negotiate management prescriptions specific to the landscape that provide a greater return than would occur under default Forest and Fish rules. The assurances that this Plan offers are part of the basis for the Permittee's decision not to pursue the development alternative.

D. Goals and Objective of Agreement

The Services are striving to conserve and enhance habitat for many species through a range of options available to private landowners, including SHAs, CCAAs, and HCPs while allowing landowners to remain economically viable. The following principles guided the development of this Plan:

1. Accomplish the above conservation by retaining economic incentives for landowners.

2. Protect natural functions necessary for ecosystem health and biodiversity.
3. Conserve, develop and enhance habitat that may be of limited availability in the surrounding landscape, especially mature forest with complex structure, and other existing unique habitats.
4. Provide healthy wetlands and riparian areas that will protect water quality.
5. Achieve long-term conservation of wildlife by maintaining the property in forests.

Market conditions for forest products and concerns over environmental regulations have, in recent years, caused many forest landowners to decrease the length of forest stand rotations or to convert their ownership to other land uses. To ameliorate the negative effects associated with this type of management and land use decision-making, the Services have encouraged forest land managers to retain their forest lands in a forested condition, lengthen harvest rotations, develop structural diversity within stands during the rotation and, subsequently, maintain some portion of that structure into the next rotation. Specifically, the Services have encouraged landowners to retain standing dead trees, fallen trees as coarse woody debris, and green, legacy trees, as well as adopting management, or enhancement activities that promote the development of suitable wildlife habitat through silvicultural activities. In addition, the Services are seeking to provide the necessary protection to ensure healthy riparian and wetland ecosystems, as well as specialized habitat types.

The Permittee's objective is to maintain their economic viability while enhancing wildlife habitat during tree-farm management, and to obtain authorization for take of the species covered by this Plan. Permits are being requested for disturbance or habitat modification during or subsequent to any timber harvest and related activities for 80 years.

The covered activities. The Permits will only authorize take in connection with those aspects of forest management considered in the Plan. The activities to be covered by the Permits include all aspects of:

(a) timber harvest (including timber cutting, felling, bucking, , limbing, yarding (using ground-based, cable or aerial means), log sorting, log loading and unloading) whether such harvest employs clear cut, partial cut, shelterwood, seed tree or other silvicultural methods;

(b) landing and road construction, landing and road maintenance, landing and road decommissioning (including the construction, reconstruction and/or maintenance (including cleaning and clearing) of all ancillary road structures (e.g., road ballast, cut and fill slopes, running surfaces, ditches, culverts, bridges and all other road-related water crossing, water managing or water passing facilities);

(c) all administrative and commercial road use for or associated with the activities described in this Plan;

(d) site preparation (including slash burning, piling, windrowing, and scarification) and reforestation (whether by planting, seeding or natural regeneration means);

(e) silvicultural activities (including manual or mechanical brush control, prescribed burning, thinning (commercial or non-commercial), pruning, salvage, use of forest fertilizers;

(f) fire prevention and suppression efforts (including mop-up activities);

(g) erosion control measures;

(h) planning, layout and forestry administration activities (including ; timber stand examinations, inventories, and cruises, painting or other marking of timber or stand boundaries, layout of harvest units, survey and layout of roads (together with ancillary structures)land surveys, property boundary marking, general property and timber reconnaissance, harvest and removal of miscellaneous forest products (including firewood, brush, mushrooms and ferns), wildlife surveys, and monitoring and administration of the activities described in this Plan;and

(i) all other activities required of the Permittee by the Plan (e.g., monitoring).

E. Proposed Action and Decisions Needed

The proposed action is the issuance of Permits by the Services to allow incidental take of covered species under this Plan, while conducting timber harvest and associated activities on the Tagshinny Tree Farm in Lewis County, Washington. Pursuant to sections 10(a)(2)(A) and 10(a)(2)(B) of the ESA, decisions to be made by the Services are as follows:

1. The FWS Permit for a SHA will be issued if the following issuance criteria (from 50 CFR §17.22(c)(2) are met:

    a. The take will be incidental to an otherwise lawful activity and will be in accordance with the terms of the SHA;
    b. The implementation of terms of the SHA will provide a net conservation benefit to the affected listed species by contributing to the recovery of listed species included in the Permit and the SHA;
    c. The probable direct and indirect effects of any authorized take will not appreciably reduce the likelihood of survival and recovery in the wild of any listed species;
    d. Implementation of the terms of the SHA is consistent with applicable Federal, State, and tribal laws and regulations;
    e. Implementation of the terms of the SHA will not be in conflict with any ongoing conservation or recovery programs for listed species covered by the Permit; and
    f. The Permittee has shown capability for and commitment to implementing all of the terms of the SHA.

The FWS hereby finds that the foregoing criteria have been met by this Plan, thus, the FWS will provide the Permittee assurances that should additional conservation and mitigation measures be deemed necessary, these measures will not involve the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water or other natural resources otherwise available for development or use under the original terms of the Safe Harbor Agreement without the consent of the Permittee. These assurances will become effective immediately upon

issuance of an Enhancement of Survival Permit under section 10(a)(1)(A) of the Endangered Species Act.

2. The FWS Permit for a CCAA will be issued if the following issuance criteria (from 50 CFR §17.22(d)(2) are met:

    a. The take will be incidental to an otherwise lawful activity and will be in accordance with the terms of the Candidate Conservation Agreement;
    b. The Candidate Conservation Agreement complies with the requirements of the CCAA policy;
    c. The probable direct and indirect effects of any authorized take will not appreciably reduce the likelihood of survival and recovery in the wild of any species;
    d. Implementation of the terms of the Candidate Conservation Agreement is consistent with applicable Federal, State and Tribal laws and regulations;
    e. Implementation of the terms of the Candidate Conservation Agreement will not be in conflict with any on going conservation programs for species covered by the Permit; and
    f. The Permittee has shown capability for and commitment to implementing all of the terms of the Candidate Conservation Agreement.

The FWS hereby finds that these criteria are met by this Plan. Therefore, the FWS hereby provides the Permittee assurances that no additional conservation measures nor additional land, water, or resource use restrictions, beyond those voluntarily agreed to and described in Section V. of this Plan, will be required should any of the covered unlisted species become listed in the future. These assurances will become effective immediately upon FWS' issuance of an Enhancement of Survival Permit under section 10(a)(1)(A) of the Endangered Species Act, subject to the provisions of Section X of this Plan.

3. NOAA-Fisheries hereby finds that the following issuance criteria (from 50 CFR §222.307) are met:

    a. The taking will be incidental (to an otherwise lawful activity);
    b. The applicant will, to the maximum extent practicable, monitor, minimize, and mitigate the impacts of such taking;
    c. The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and
    d. There are adequate assurances that the conservation plan will be funded and implemented.

Both the Permittee and NOAA-Fisheries expect that threatened Lower Columbia River steelhead and candidate Lower Columbia River/SW Washington coho nowhave passage into a portion of the Plan area. Accordingly, NOAA-Fisheries will issue an Incidental Take Permit for this Plan. NOAA-Fisheries' also provides the assurances that should additional conservation and mitigation measures be deemed necessary, these measures will not involve the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water or other natural resources otherwise available for development or use under the original terms of the Plan without

the consent of the Permittee. These assurances will become effective immediately upon issuance of the Incidental Take Permit pursuant to section 10(a)(1)(B) of the Endangered Species Act, subject to the provisions of Section X of this Plan.

F. Responsibilities of Each Party

The Parties to this Plan are the FWS and NOAA-Fisheries, and the Permittee, each of which shall execute this Plan. Each signing party agrees to be bound by and to the commitments of this Plan and associated permits.

The Permittee will:

1. Manage the Tagshinny Tree Farm in a manner consistent with the requirements set forth in Section V of this document, entitled "Enhancement Activities and Conservation Measures for Covered Species." As detailed in Section V of this Plan, management activities include the commitment to retain certain standing dead and green recruitment trees at the time of any harvest; wetland and riparian zone conservation measures; and extending forest stand rotations to produce mature forest structural conditions suitable as habitat for the covered species. Based on the measures of Section V, it is expected that these activities will: (a) provide a net benefit to listed species covered by the SHA elements of this Plan; (b) when combined with those benefits that would be achieved through the CCAA elements of this Plan, and if implemented on other similarly situated properties, would preclude the need to list proposed, candidate, and other species of concern; and (c) the implementation of the Low-effect HCP elements of this Plan will serve to avoid and minimize take of covered species, to conserve their habitats should they be listed, and to not appreciably reduce the likelihood of survival and recovery of those species in the wild.

2. Monitor management activities to ensure the Permittee is complying with the Enhancement Activities and Conservation Measures in Section V; and

3. Provide scheduled reports to the Services as specified in this Plan.

The Services will:

1. Coordinate with the Permittee to provide technical assistance on issues related to the ESA and implementation of this Plan;

2. Issue the permits as described in this Plan;

3. Fully comply with all other obligations of the Services set forth in this Plan and the associated permits, and, consistent with Section II.E above, provide the assurances described herein to the Permittee for the duration of this Plan and set forth at 50 CFR 17.22(c)(5), 17.22(d)(5) by the FWS, and at 50 CFR 222.307 (g) by NOAA-Fisheries;

4. Monitor implementation of the Plan through review of scheduled reports and periodic site visits as appropriate.

G. Covered Species

Seventeen species are proposed for coverage under this Plan. Each species is listed in Table 1, below, together with an indication of which Service has jurisdiction over the species, the type of § 10 permit that will be issued, and which element of this Plan governs the species.

Table 1. Covered species in the Tagshinny Tree Farm Conservation Plan by agency, permit and Plan element type. Species status is footnoted.

Service	**USFWS**	**USFWS**	**NOAA-Fisheries**
ESA Permit	Enhancement of Survival - 10(a)(1)(A)	Enhancement of Survival - 10(a)(1)(A)	Incidental Take - 10(a)(1)(B)
Plan Element	Safe Harbor Agreement	Candidate Conservation Agreement	Low Effect Habitat Conservation Plan
Species (common name)			
Northern Spotted Owl [1]	**X**		
Marbled murrelet [1]	**X**		
Bald eagle [1]	**X**		
Lower Columbia steelhead [1]			**X**
Coastal cutthroat trout [2]		**X**	
Oregon spotted frog [2]		**X**	
Lower Columbia coho [2]			**X** [3]
Northern goshawk [4]		**X**	
Olive-sided flycatcher [4]		**X**	
Long-eared myotis [4]		**X**	
Long-legged myotis		**X**	
Pacific Townsend's big-eared bat [4]		**X**	
Van Dyke's salamander [4]		**X**	
Northwestern pond turtle [4]		**X**	
Pileated woodpecker [5]		**X**	
Great blue heron [6]		**X**	
Osprey [6]		**X**	

[1] Threatened status under the ESA.
[2] Candidate for listing under the ESA.
[3] Would be added to the Incidental Take Permit when listed under the ESA and occupying the Plan area.
[4] Federal species of concern.
[5] Washington State species of concern.
[6] Washington State priority species.

III. DESCRIPTION OF TAGSHINNY TREE FARM AND VICINITY.

A. Geology and Soils

With the exception of the Permittee's Highway 12 property, all of the parcels are situated on relatively flat lands with a low potential for mass wasting and surface erosion. The 15 acres at the Highway 12 parcel are situated on a very steep, south-facing slope where the potential for mass wasting (slumping) may be high. Following are soil descriptions for the 5 parcels based on information provided by the Permittee or researched from soil survey maps and descriptions for Lewis County (USDA 1987).

Soils on the 46-acre Home parcel are entirely on old prairie soils of the Lacamas silt loam soil group. These soils are deep, yet poorly drained. The primary problem associated with these poorly drained soils is a high water table during the rainy season which may impart anoxic conditions that may contribute to tree mortality and increase the potential for windthrow.

Soils at the 67-acre Kinzie Road parcel belong to the Prather silty clay loam soils group and the Lacamas silt loam group. Prather soils generally consist of very deep, moderately well-drained soils; Lacamas soils also are very deep but are poorly drained and are listed as a hydric soil of the United States. These soils are classified for forest management purposes as Site Class 5 which indicate poor growing conditions for conifers.

Soils at the 15-acre Highway 12 parcel belong to the Chehalis silty clay Series and are termed xerorthents which are moderately deep to very deep and moderately well-drained. Available water capacity is low to moderate, runoff is rapid and the potential for erosion is high. Following timber harvest on steep slopes, mass wasting from road failures or from the harvested trees on the slope may occur.

Soils at the 6-acre Winter Road parcel are composed primarily of the Salkum silty clay loam series and a small portion of Lacamas silt loam. The Salkum silty clay loam soil type is deep, poorly drained and is generally found on level or gently sloping lands; Lacamas silty loam soils also are very deep but are poorly drained and are listed as a hydric soil of the United States.

Soils at the 10-acre Burchett parcel are composed of a Salkum silty clay loam on 0-20 percent slopes. These soils are very deep and well drained and situated on slopes. Permeability is moderately slow. The soils are primarily formed in highly weathered ancient glacial drift deposits. Conifer species do well on these sites, although sites that have been managed in the past, are generally occupied with red alder, as well.

B. Roads

There is 7,100 feet of rocked road and 5,100 feet of unrocked road for a total of 12,500 feet (2.37 miles) of road that currently exist on the Tagshinny Tree Farm. Only the Home parcel road system and the interior unrocked roads within the harvest units on the other parcels are within the complete control of the Permittee. The amount of rocked and unrocked road by parcel is provided below.

ROCKED ROAD

Home Site	Kinzie	Burchett	Hwy 12	WinterRD
2,300 feet	4,200 feet	200 feet	100 feet	600 feet

UNROCKED ROAD

Home Site	Kinzie	Burchett	Hwy 12	WinterRD
1,300 feet	2,400 feet	800 feet	400 feet	200 feet

Rocked roads sustain higher use than unrocked roads. These roads typically are multiple-use and multiple-ownership roads that allow access to most of the Permittee's parcels and receive daily use by landowners with homes on property adjacent to the Permittee's parcels. No road maintenance agreements exist between Permittee and adjacent property owners, and it is understood by the Services that the Permittee does not have control of use or maintenance responsibilities as they relate to use by adjacent landowners, and that Permittee has no responsibility under this Plan to take measures to mitigate for the effects of road use by third parties.

Unrocked roads are typically the interior roads within the harvest units; roads with restricted public access receiving very little use on an annual basis. These roads are owned and maintained by the Permittee. Each year ditches and culverts are inspected, cleaned, and kept functional according to best management practices. Ground water captured by ditchlines is diverted onto stable portions of the forest floor by using ditchouts, culverts or drivable dips. Road surface is maintained as necessary to: minimize erosion of the surface and the subgrade; and minimize direct delivery of surface waters and sediment entry into streams. Use of unrocked roads occurs only during dry or frozen road conditions when no rutting or damage will occur to the road surfaces.

No fish passage barriers, mass wasting, stream adjacent parallel roads, seeps and springs, small diameter culverts or orphan roads issues exist on the Permittee's road system. It is expected that these existing roads will to continue to provide sufficient access to the parcels for management purposes and, therefore, it is expected that no new roads will need to be constructed. With only minimal, intermittent use of interior roads by the Permittee over the Plan duration and the low road gradient conditions that exist, sediment delivery from road surfaces to streams is unlikely.

At the Kinzie parcel, the road that runs perpendicular over the seasonal Skook Creek tributary is flat, narrow, and has vegetation growing between the tire tracks. The roadbed is primarily composed of dirt, however, there is a patch of gravel over the culverts to stabilize this area and prevent siltation into the stream. Two culverts were installed in compliance with State standards in the early 1990's which has and will continue to provide adequate flow passage during the winter,

when flows occur. Because of the extremely low gradient, and the fact that the road runs perpendicular to the stream, is vegetated, and used infrequently, there is very little, if any, sediment delivery to the stream.

C. General Vegetation and Forest Habitat Conditions

The forest types on each of the five parcels are dominated by young and mature Douglas-fir forest communities, and lie within the western hemlock zone of the southern Washington Cascades as defined by Franklin and Dyrness (1973). Associated tree species include Douglas-fir, western hemlock, western red cedar, and on silty clay loam soils typical of remnant prairie conditions, lodgepole pine is present. On the Winter road parcel, grand fir is found in the mix of overstory tree species. Hardwoods species found on the Permittee's property include red alder, Oregon ash, quaking aspen, black cottonwood and bitter cherry.

The Winter Road property is a six-acre stand that received a limited entry, commercial thin in 2000, however, it still provides mature forest wildlife habitat characteristics in its current condition. All forests on the Permittee's other parcels have been harvested to some degree. However, on each of the parcels, a mix of conifer and hardwood tree species were retained at the time of the harvest. These trees are greater than 40 years of age and remain in scattered patches of various sizes comprising approximately 25% of the forested ownership.

D. Baseline Habitat Conditions

The baseline habitat conditions for each parcel is described separately. As a SHA, it is understood by the Permittee and the FWS that the habitat value will not be reduced below the established baseline conditions on the collective parcels, i.e., the condition of the forested habitat may shift from parcel to parcel, but the combined overall quantity and quality of the habitat will not decrease below the baseline during the term that the Plan remains in effect. See the summary of forest age classes by parcel at the end of this section (Table 2). Snag structures, and green recruitment trees, will provide snag habitat and be retained throughout the term of the Plan as set forth in Section V below.

Riparian and wetland habitat conditions will improve with the Permittee's management and conservation activities that retain trees and understory vegetation in riparian and wetland management areas. As stands in these areas develop, economic value will be returned to the Permittee through active management while being maintained to provide functional riparian, wetland, and in-stream habitats.

Home parcel. The Home parcel is 46 acres total; 39 acres are forested and 7 acres are unforested. The unforested acreage consists of home and office sites covering 3 acres, a 1-acre Christmas tree stand, and 3 acres of grassland habitat on Lacamas prairie soils. Site index (King 1966) for this parcel is 108 feet at 50 years. Approximately 5 acres of this property are unthinned 45 year-old, second growth Douglas-fir and lodgepole pine. A small forested portion (about 4 acres) near the

tree farm office has been commercially thinned, these trees are also about 45 years age. Thinning was from below, i.e., the smaller trees were removed during the harvest, and the larger diameter, taller trees were retained. Another portion of the property (20 acres) was regeneration harvested in 1992 and has been planted with a variety of tree species, depending on the local site conditions. Trees were planted at 680 trees per acre (TPA) and include genetically improved Douglas-fir, lodgepole pine, western white pine, western red cedar, and western hemlock. A small area (4 acres) has been planted to hybrid poplar that will quickly provide dense cover and tall trees for a variety of animals, including migratory birds. The 3 acres of this parcel found on prairie soils are not known to have supported trees in the past; the Permittee has attempted to plant and grow conifers in this area with little success. However, the Permittee performed a prescribed burn on a portion of the prairie and a flush of lodgepole pine seed that was stored in the soil germinated at approximately 4000 seedlings/acre; these trees have been pre-commercially thinned to control stocking density.

Kinzie Road parcel. The Kinzie parcel is actually three tracts in close proximity to each other (~325 feet at the closest point) that are considered in this Plan collectively as one parcel. This parcel totals 67 acres, being comprised of 2 tracts of approximately 10 acres each and one tract of approximately 47 acres. There is a seasonal (intermittent), stream emptying into and flowing from the wetland. This stream is a tributary to Skook Creek, which flows into the Cowlitz River, approximately 1.5 miles downstream from the parcel. Approximately 64 acres of this parcel is forested with either mature trees (11 acres), or in a regeneration condition (53 acres) with residual mature trees (45-plus years of age) that have been retained from previous harvests. The remaining 3 acres are roads and a portions of a 4-acre wetland. The site has the same soil type as the Home parcel (Lacamas prairie soil), which is Site Class 5 ground.

The wetland has a seasonal, stream (a Skook Creek tributary) emptying into and flowing from it. To the northeast, the property line lies just outside the wetland edge, i.e. the wetland is not on the Permittee's ownership. However, the northeastern wetland edge is buffered by trees and vegetation along the stream on the Permittee's land. The wetland is believed to have been formed, and currently is maintained, by beavers. Approximately 50 feet from the wetland along the stream there are scattered deciduous trees (alder and ash) 20-60-feet in height, with a heavy brush understory of rose, willow, rush and dogwood. At about 30 feet from the wetland edge, the vegetation grades into a similar shrub understory but with lodgepole pine and alder about 10 feet in height. This habitat extends out from the stream for about 30 feet before the land becomes more plantation-like with young trees, huckleberry and vine maple. There is a clump of trees at the wetland edge consisting of several alder and 2 tall Douglas fir. The one-acre portion of the wetland on the Kinzie parcel at the southwestern edge of the wetland is buffered for about 75 feet with older trees of variable density; 30-50 TPA. These trees, which include western red cedar, Douglas-fir, ash and alder ranging from 10-20 inches dbh, are primarily residual overstory trees, approximately 45 years of age, retained from a previous harvest. Young Douglas fir plantation trees start appearing at approximately 50 feet from the wetland. Understory vegetation at this end of the wetland consists of salal, swordfern, and vine maple. The wetland has abundant large wood in several places and appears to provide abundant cover for fish species/life stages that may use these habitats now and in the future.

The seasonal Skook Creek tributary flows into and from the wetland, then downstream into Skook Creek which eventually flows into the Cowlitz River. On an average annual basis, this stream flows

from the beginning of November through May. Because the Kinzie parcel is very flat land, the Skook Creek tributary is a very low-gradient stream, likely channelized by past management practices, perhaps for draining purposes. This stream flows west approximately 900 feet across the parcel to a small road that runs perpendicular to it, through two small culverts beneath the road, then on for about another 850 feet into the wetland. For this Plan, the lower 850 feet of the Skook Creek tributary will be treated as a fish-bearing stream while the upper 900 feet will be considered non fish-bearing. This designation is based on reconnaissance by FWS fish biologists on February 28, 2000 (Appendix D). This tributary is a defined channel, 2 feet in width at its widest east and west of the road before it fans out slightly to 3-4 feet as it enters the wetland. This narrow stream has a bankfull depth of 1.5 to 2.0 feet in a defined channel. With higher flows, the stream floods adjoining flat areas but is not associated with a distinct floodplain or fluvial depositional features. The soils in the area are primarily clay and comprise the bed (substrate) and banks of the channel and adjoining surfaces. Gravel substrates are not evident, or to be expected, given the fine texture and clay dominance of the stream bed and banks. Recruitment of gravels from upslope source areas is not possible because of the low relief (topography) proximal to the stream. There is no woody debris in or adjacent to this stream.

The clay soils make it difficult for trees to grow adjacent to the stream (Site 5 ground) in some areas; the land immediately adjacent to most of the stream is dominated by brush species with 4 to 6-foot high willow, salmonberry, rose and dogwood, as well as tall rushes and reed canary grass. As the land rises towards the plantation, the vegetation changes to more alder, huckleberry, thimbleberry and vine maple.

Vegetation along the stream in what would be considered the riparian zone is variable in density, height, thickness and species composition. With the road as a reference point, from west to east, the first 50 feet from the road on the non fish-bearing portion consists primarily of reed canary grass and rushes before grading into dogwood, rose, 10-12 feet high willows, and eventually ash and cottonwood. The vegetation along the non fish-bearing portion of this stream is approximately 30-70 feet wide before it becomes a 7-acre mixed conifer and deciduous stand of trees. From east to west, the fish-bearing portion is vegetated in a similar manner. There are very few conifers older than 10 years within 50 feet of the stream edge. The first 50 feet of stream length from the road is straddled by reed canary grass and rushes. Approximately 50 feet from the road, there is a 100-foot wide clump of ash, oak and aspen 60-80 feet high with some cedar and a shrubby understory 4-8 feet high. At a distance of 200 feet from the road, the deciduous trees thin out and young 8-year old lodgepole pine appear on the north side of the stream. Between 300-500 feet along the stream, scattered young lodgepole pine are present approximately 20 feet from the stream. For the next 200 feet of stream length, there are about 15-20 deciduous trees scattered about or in clusters of 2 or 3 within 30 feet of the stream edge. Some young lodgepole pine are present within this 30-foot distance. At a distance of 750-800 feet (50-100 feet from the wetland), there is a clump of deciduous trees similar to those about 50 feet from the road, described above. The brushy understory is very thick and extends out from the stream, variably for 10-25 feet.

A portion of the Kinzie property was regeneration harvested prior to being purchased by the Permittee; residual overstory trees are approximately 45 years of age. The trees that were retained during the harvest primarily include western red cedar, Douglas-fir, lodgepole pine, oak, and ash ranging from 10-20 inches dbh. In addition, a 7-acre portion of the parcel at the extreme east end

of the parcel is uncut, and forested with mature 45 year old mixed conifer and deciduous trees. The portion of the parcel that was regeneration harvested has retained trees scattered in clumps throughout the parcel. Tree density is highest nearest the stream, due to the presence of residual deciduous trees. Tree density varies from 200 TPA at the eastern portion of this parcel (the mixed conifer and deciduous stand) to about 80 TPA along the reach of stream before it enters the wetland. In the harvested portions of the parcel, between the clumps of retained trees and outside of the stream management zone, trees have been planted at a density of approximately 650 TPA, and with the same complement of tree species as the Home parcel. The planted trees are currently 8 years old and in combination with the retained mature trees, a two-aged, multi-storied stand is developing on this parcel.

The road that runs through this parcel is flat, narrow and in most places, partially revegetated with grasses and pioneer woody species. The running surface and sub-grade of the road is primarily composed of dirt. Roads are constructed such that water and sediments from road use are dispersed directly to low gradient forest floor surfaces and are conducted by any distinct ditchlines directly to any streams. There are patches of gravel running surface over the culverts to limit point delivery of road-generated sediments. Because of the extremely low gradient and the fact that the road runs perpendicular to the stream, there is very little sediment delivery to the stream.

Highway 12 parcel. The Highway 12 parcel is approximately 15 acres in size, 14 acres of which is forested. Adjacent to the eastern portion of the parcel, a leave strip of mature (> 80 years old) Douglas-fir, bigleaf maple and western red cedar has been retained in a power line right-of-way owned and managed by Tacoma City Light. This leave strip of approximately 2 acres runs from the top of the parcel to the base of the slope, becoming contiguous with the shoreline buffer along Mayfield Lake. In combination, the leave strip beneath the power-line (2 acres) and the portion of the Shoreline buffer on the Permittee's parcel equals about 4 acres of late-successional forest. The one acre of unforested land is also adjacent to the power line right-of-way. The remaining 12 acres of the ownership were regeneration harvested in 1991, and the stand was planted with Douglas-fir in 1994, and therefore has a regeneration stand with trees of approximately 8 years of age. There is considerable bigleaf maple present in the regenerating stand, resulting from maple stumps that have sprouted new stems since the stand was cut in 1991. At the northwest corner of this stand is a large diameter (>50 inches dbh) Douglas-fir that only has a few live branches. This individual tree is a significant wildlife structure in the vicinity of this stand and will be retained, regardless if it remains alive or dies, during the term of the Agreement.

Burchett Road parcel. The Burchett Road parcel is 10 acres in size. The stand is dominated by 18 year-old Douglas-fir on approximately 8 acres, with 45-50 year old Douglas-fir dominating the remaining 2 acres. The site index is 120 feet at age 50. The Permittee plans to regeneration harvest 2 acres of this stand during the first decade of the Agreement, during the years 2000-2010.

Winter Road parcel. The Winter Road parcel is 6 acres, and is forested by approximately 40 year old, second-growth trees that was commercially thinned in 2000. The stand is dominated by Douglas-fir and grand fir with a site index of 119 feet at age 50. The larger trees in the stand range from 20-25 inches dbh for Douglas-fir and up to 20 inches dbh for grand fir. The current stand density ranges from approximately 100-150 trees per acre. Some small openings of about one - two crown diameters in size exist throughout the stand. These openings have well-developed shrub

patches that prohibit conifer regeneration but are likely good foraging sites for small, forest floor dwelling mammals.

To summarize, the current condition of forested habitat on each parcel is variable, however, all parcels contain some trees that provide habitat conditions suitable for the covered listed species; shown as forest age classes in Table 2. There are few large snag structures currently on the ownership except near the wetland. These structures are expected to be provided on each parcel as the harvest units are managed, thus, the quantity and quality will increase throughout the term of the Plan. The riparian and wetland habitats are currently partially buffered by abundant understory vegetation, clumps of residual hardwoods, and a few conifers. This habitat will improve over the term of the Plan as the conifers in the riparian and wetland management zone mature, and minimum prescriptions for tree retention are applied.

Table 2. Summary of forest age classes by parcel (forest habitat baseline conditions), as of January, 2001.

Parcel Name	Total Acres/ Forested Acres	Acreage of Forest Land by Forest Age Class				
		0-20 years	20-40 years	40-60 years	60-80 years	80+ years
Home	46/39	27	0	12	0	0
Kinzie Road	67/64	53	0	11	0	0
Highway 12	15/14	12	0	0	0	2
Burchett Road	10/10	8	0	2	0	0
Winter Road	6/6	0	0	6	0	0
Total Acreage	144/133	100	0	31	0	2
Percent Forested Acres		75	0	23	0	1.5

IV. STATUS OF THE SPECIES and BASELINE DETERMINATION

A. Listed Species covered by the Safe Harbor Agreement element of this Plan

1. Northern Spotted Owl

Status. The northern spotted owl is Federally listed as threatened under the Endangered Species Act. A thorough account of the ecology and life history of the northern spotted owl is found in the Interagency Scientific Committee's *A Conservation Strategy for the Northern Spotted Owl* (Thomas et al. 1990), the three status reviews by the FWS (USDI 1987, 1989, 1990), the final rule listing the northern spotted owl as a threatened species (55 FR 26114), and the final rule designating critical habitat for the owl (57 FR 1796). Relevant information regarding the landscape characteristics of the northern spotted owl habitat is found in Carey et al. (1992), Lehmkuhl and Raphael (1993), Carey and Peeler (1995), Hanson et al. 1993, and the FWS' Biological Opinion for *Alternative 9 of the Final Supplemental Environmental Impact Statement on the Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl* (USDA and USDI 1994a). The relationship between northern spotted owls and their prey is documented in Carey et al. (1992), Carey and Johnson (1995).

On January 15, 1992, (57 FR 1796) the FWS designated 6,887,000 acres of critical habitat on Federal lands. Critical habitat units were designated solely on Federal lands. This designation provided additional protection to the species. Additional information regarding current status of the species was presented in the February 17, 1995, Federal Register document (60 FR 9484) that proposed a special rule under Section 4 (d) of the Act. The proposed special rule, when made final, will replace current guidelines and prohibition from take with geographically specific set of standards that reduce prohibitions applicable to timber harvest and related activities on specified non-Federal forest lands in Washington and California.

A final draft Recovery Plan was prepared but never released. Non-Federal lands in certain portions of the owl's range are considered necessary to support and supplement the Federal lands-based owl conservation strategy.

Demographic information is still lacking to reliably project a population trend. Much of the available data and many models suggest that although the population may be declining, the population is stable or nearly stable when adjustments are made for juvenile emigration rates. However, the most widely cited data indicate the population is declining and that the rate of decline is accelerating (Burnham et al. 1994; Franklin et al. 1999).

In Washington, 1045 status 1-3 (territorial) owl sites were recorded as of February 22, 2001. Of the 1045 sites, 155 were centered on non-Federal lands. Of the remaining 890 territorial sites, exactly one-half (445) occurred exclusively on federal lands. Consequently, 600 of the 1045 territorial owls sites occurred on, or had owl management circles that extended into, non-federal lands.

Currently, there are no northern spotted owls nesting on the Permittee's property. The closest known owl sites are the North Fork Cedar Creek Site, #256, approximately 4.6 miles southeast of

the Kinzie Road parcel, and the Lacamas Creek Site, #1037, approximately 3.6 miles northeast of the Winter Road parcel (WDFW 1999a). Lands between the owl sites and the Permittee's parcels are privately owned and managed for a variety of uses. Northern spotted owl survey results indicate that the North Fork Cedar Creek Site was last known to be occupied with a reproductive pair in 1995, while the Lacamas Creek Site was last known to be occupied with a reproductive pair in 1993 (WDFW 1999a). No subsequent surveys have been conducted since that time, thus, it is unknown whether these sites are currently occupied. The likelihood that the Permittee's parcels in their current condition are utilized by northern spotted owls is low primarily due to the young age of the forested parcels, but also because of their patchiness, their distance from known owl site centers, and non-forest land management practices in the area.

Baseline determination. The habitat conditions on the Permittee's property are not currently suitable to support nesting spotted owls. Currently, there is no known occupancy by spotted owls on the Permittee's property. The parcels owned and managed by the Permittee were, for the most part, harvested prior to the Permittee's acquisition of the parcels. Currently, 75 percent of the forested acreage combined in all the parcels is comprised of forests from 0-20 years age, approximately 23 percent is in forest from 40-60 years age, and 1.5 percent of the land has mature forests greater than 80 years age. The stands in the 40-60 age class could be utilized by spotted owls as dispersal and foraging habitat. The 2 acres of older forest may contain nesting structures or contribute to the size of nesting habitat when combined with the older forest on adjacent Tacoma City Light land, however, the patch size is so small that nesting by spotted owls is unlikely. The 12-acre portion of the Home parcel > 40 years of age could function as dispersal or roosting habitat, although this stand is a combination of thinned and unthinned, and is likely too small to be utilized by spotted owls. Thus, irrespective of patch size, approximately 30 acres of owl habitat may be available for use as dispersal and roosting habitat. The quality would be considered marginal as most of stands are at the lower end of the 40-60 year age class. The agreed upon baseline condition for habitat that could be used by spotted owls is ≥19% of the ownership will be in forest age classes ≥ 40 years of age.

2. Marbled Murrelet

Status. The marbled murrelet (murrelet) was Federally listed as threatened on September 28, 1992 (USDI 1992c). An account of the taxonomy, ecology, and reproductive characteristics of the murrelet is found in the 1988 Status Review (Marshall 1988); the Final Rule designating the species as threatened (USDI 1992c); the FWS's Biological Opinion for Alternative 9 of the FSEIS; the *Ecology and Conservation of the Marbled Murrelet* (Ralph et al. 1995a); the Final Rule designating critical habitat for the species (USDI 1996); and, the Recovery Plan for the species (USDI 1997).

The size of the listed murrelet population in Washington, Oregon and California has been estimated at 18,550 to 32,000 (Ralph et al. 1995b). The large range in the population estimate is a result of two widely divergent population estimates in Oregon. In Washington, Speich and Wahl (1995) concluded that murrelet populations in Puget Sound are lower now than they were at the beginning of this century. The estimate for Washington, which was made in the early 1980s, is about 5,500 murrelets (Speich and Wahl 1995). Varoujean and Williams (1994) estimated that 1,720 murrelets

occur on the outer coast of Washington and the western portion of the Strait of Juan de Fuca. It is unknown how many of these birds are part of the regional breeding population.

The loss of nesting habitat (older forest) has generally been identified as the primary cause of the murrelet's population decline and disappearance across portions of its range (Ralph et al. 1995a; USDI 1997). Other factors of importance include high predation rates, mortality in gillnets, and oil spill mortality.

Murrelets are dependent upon old-growth forests and forests with older trees suitable for nesting (Hamer and Nelson 1995; Ralph et al. 1995b). Sites occupied by murrelets tend to have a higher proportion of mature forest age classes than do non-occupied sites (Raphael et al. 1995). Much of this habitat has been lost due to timber harvest over the last century (Booth 1991; Bolsinger and Wadell 1993; Ripple 1994; Perry 1995). Based on Teensma et al. (1991) and other sources, Ripple (1994) concluded that the amount of old-growth forest lands in the Oregon Coast Range was 43 percent in 1933 and 61 percent before the 1840s. This determination is consistent with Booth's (1991) conclusion that 82 to 87 percent of the old-growth forests that existed in western Washington and Oregon prior to the 1840s is now gone.

Under the Northwest Forest Plan (NFP), the USFS and Bureau of Land Management adopted a plan for their lands that provides a long-term management strategy for murrelets (USDA and USDI 1994b). The NFP mandates the protection of all sites determined to be occupied by murrelets, including those found outside mapped Late-Successional Reserves (LSRs). In the short-term, all known occupied sites of murrelets occurring on Federal lands are to be managed as LSRs. In the long-term, unsuitable or marginally suitable habitat occurring in LSRs will be managed, overall, to develop late-successional forest conditions, thereby providing a larger long-term habitat base into which murrelets may eventually expand. Thus, the NFP approach offers both long-term and short-term benefits to the murrelet. It is anticipated that implementation of the NFP will result in an 80 to 90 percent likelihood of achieving a murrelet population well-distributed across Federal lands in 100 years.

The range-wide status of the murrelet has been affected by a number of recent HCPs. Three Oregon HCPs cover 302,106 acres and allow incidental take of murrelets associated with 2,440 acres of low quality nesting habitat. In California, one HCP has been approved that covers 211,000 acres and allows for incidental take associated with 4,696 acres of occupied murrelet habitat and 10,516 acres of lower quality unsurveyed or unoccupied murrelet habitat. Six HCPs and one HCP amendment in Washington (not including the Washington Department of Natural Resources [WDNR] HCP) cover approximately 580,000 acres of non-Federal lands and allow for the incidental take of murrelets associated with 3,125 acres of suitable but low quality nesting habitat.

The Incidental Take Permit for the WDNR HCP permits the incidental take of all murrelets associated with the harvest of up to 74,286 acres of unsurveyed, low quality murrelet habitat. The habitat released for timber harvest will be identified based on the results of a habitat relationship study that determines which habitat is most likely to be unoccupied, and the amount of habitat released will contain no more than 5 percent of the anticipated occupied sites on WDNR lands, based on the WDNR definition of suitable habitat. The remaining high-quality habitat will be surveyed for murrelets and all occupied sites, as well as any unoccupied habitat within 0.5 mile of

occupied sites, will be protected from harvest. In addition, up to an estimated 52,000 acres of surveyed, unoccupied habitat will be released for harvest. However, all surveyed, unoccupied habitat will be maintained in southwest Washington in the short-term. Disturbance-related incidental take due to timber harvest may occur on an average of 23,500 acres per year, and on 338 acres per year due to non-timber resource activities.

Critical habitat for the murrelet was designated on May 24, 1996 (USDI 1996). Thirty-two critical habitat units (CHUs) totaling 3,887,800 acres were designated on Federal, State, county, city, and private lands in Washington, Oregon, and California. The majority of these CHUs (78 percent) occur on Federal lands, while 21 percent occur on State lands, 1 percent on private lands, less than 1 percent on county lands, and less than 1 percent on city lands.

Although most of the areas designated as murrelet critical habitat occur on Federal lands (LSRs and Congressionally Withdrawn Areas), the FWS designated non-Federal lands that met the above selection criteria where Federal lands were insufficient in providing suitable nesting habitat for the recovery of the species. The CHUs are distributed more or less evenly across the range of the species in Washington and Oregon, and less so in California.

There are important, late-successional forest tracts nearby on Federal forests at the Mineral Block of the Gifford Pinchot National Forest, located approximately 6 miles north of the Highway 12 parcel, and 15-20 miles northeast of the four remaining parcels. These tracts likely contain suitable murrelet habitat. Four hundred acres of lowland, old-growth forests are also found at Lewis and Clark State Park, less than two miles from the Home property. Lewis and Clark State Park will remain in perpetuity and, assuming this park is suitable murrelet habitat, could provide a possible source of murrelets that may occupy the Permittee's ownership in the future. However, at present marbled murrelets do not occur, nor have they been observed on or over any of the Permittee's parcels. There is the possibility that murrelets may find suitable habitat in old hemlock trees with large, platform branches on the Permittee's Highway 12 parcel which currently has old-growth Douglas-fir, western hemlock and western red cedar trees that are reserved as a Shoreline of the State, including portions of this shoreline owned by the Permittee (Definition of Shorelines of the State provided in the bald eagle assessment). Although the Permittee's ownership is only 2 acres, it is adjacent to another 2 acres of late successional trees on lands owned and managed by Tacoma City Light and may provide a small patch of habitat suitable for murrelet occupancy. A single murrelet detection was made approximately 1.25 miles from the Burchett Parcel, although the detection was likely a fly-over; it was not a behavior indicative of an occupied stand (WDFW 1999a).

Baseline Determination. Currently, there is no known occupancy by marbled murrelets on the Permittee's property. Forest stands on the Permittee's ownership were mostly regeneration harvested prior to being purchased by the Permittee, or are second-growth forest stands and, as such, the parcels contain little mature and late-successional forest habitat in patches suitable for marbled murrelet. Although the 2 acres of late-successional forest on the Highway 12 parcel likely contains structures suitable as murrelet nest sites, i.e. limbs > 7 inches in diameter suitable as nest platforms and >1 platform per acre, the patch size is so small that, even with the 2-acre Shoreline buffer, it is likely unsuitable for nesting murrelets. This 2 acres of late-successional trees constitutes

the only likely suitable murrelet habitat on the Tagshinny Tree Farm and is the agreed upon baseline condition relative to marbled murrelets.

3. Bald Eagle

Status. A detailed account of the taxonomy, ecology, and reproductive characteristics of the bald eagle is presented in the *Pacific States Bald Eagle Recovery Agreement* (USDI 1986), in the Washington state status report for the bald eagle (Stinson et al. 2001), and the final rule to reclassify the bald eagle from endangered to threatened in all of the lower 48 States (60 FR 36010) (USDI 1995c).

On February 14, 1978, the bald eagle was Federally listed throughout the lower 48 States as endangered except in Michigan, Minnesota, Wisconsin, Washington, and Oregon, where it was designated as threatened (USDI 1978a). The listing was the result of a decline in the bald eagle population throughout the lower 48 States. The decline was largely attributed to the wide-spread use of DDT and other organochlorine compounds in addition to destruction of habitat, illegal harassment and disturbance, shooting, electrocution from power lines, poisoning, and a declining food base.

In the 18 years since it was listed throughout the conterminous 48 States, bald eagle populations have increased in number and expanded their range. The improvement is a direct result of recovery efforts including habitat protection and the banning of DDT and other persistent organochlorines. The species has doubled its breeding population every 6 to 7 years since the late 1970s. As a result, the FWS has reclassified the bald eagle from endangered to threatened in the lower 48 States (USDI 1995c). In 1999, the FWS proposed to remove the bald eagle in the lower 48 States from the list of Endangered and Threatened Wildlife (USDI 1999), since the bald eagle's population growth has exceeded most of the goals established in the various regional recovery plans.

Habitat suitability for bald eagles involves accessible prey and trees for nesting and roosting (Stalmaster 1987). Food availability, such as aggregations of waterfowl or salmon runs, is a primary factor attracting bald eagles to wintering areas and influences nest and territory distribution (Stalmaster 1987; Keister et al. 1987).

Bald eagle nests in the Pacific Recovery Area are usually located in uneven-aged stands of coniferous trees with old-growth forest components that are located within 1 mile of large bodies of water. Factors such as relative tree height, diameter, species, form, position on the surrounding topography, distance from the water, and distance from disturbance appear to influence nest site selection. Nests are most commonly constructed in Douglas-fir or Sitka spruce trees, with average heights of 116 feet and size of 50 inches dbh (Anthony et al. 1982; cited in USDI et al. 1996). Bald eagles usually nest in the same territories each year and often use the same nest repeatedly. Availability of suitable trees for nesting and perching is critical for maintaining bald eagle populations.

A number of habitat features are desirable for wintering bald eagles. During the winter months bald eagles are known to band together in large aggregations where food is most easily acquired. The quality of wintering habitat is tied to food sources and characteristics of the area that promote

bald eagle foraging. Key contributing factors are available fish spawning habitat with exposed gravel bars in areas close to bald eagle perching. Bald eagles select perches that provide a good view of the surrounding territory, typically the tallest perch tree available within close proximity to a feeding area (Stalmaster 1987). Tree species commonly used as perches are black cottonwood, big leaf maple, or Sitka spruce (Stalmaster and Newman 1979). Forests with suitable nest and perch trees are critical to bald eagle populations.

Wintering bald eagles often roost communally in single trees or large forest stands of uneven ages that have some old-growth forest characteristics (Anthony et al. 1982; cited in USDI et al. 1996). Some bald eagles may remain at their daytime perches through the night but bald eagles often gather at large communal roosts during the evening. Communal night roosting sites are traditionally used year after year and are characterized by more favorable micro climatic conditions. Roost trees are usually the most dominant trees of the site and provide unobstructed views of the surrounding landscape (Anthony et al. 1982; cited in USDI et al. 1996). They are often in ravines or draws that offer shelter from inclement weather (Hansen 1978 as cited in USDI et al. 1996; Keister 1981; cited in USDI et al. 1996). A communal night roost can consist of two birds together in one tree, or more than 500 in a large stand of trees. Roosts can be located near a river, lake, or seashore and are normally within a few miles of day-use areas but can be located as far away from water as 17 miles or more. Prey sources are available in the general vicinity, but close proximity to food is not as critical as the need for shelter that a roost affords (Stalmaster 1987).

The primary objective of the bald eagle recovery process is to provide secure habitat for bald eagles within this recovery area and to increase population levels in specific geographic areas to the extent that the species can be delisted. Achieving the recovery goal of increasing the number of nesting pairs in the recovery area will require the protecting of existing habitat for breeding and wintering bald eagles and restoring habitat lost due to human development and modification (USDI 1986).

Currently there are no bald eagles nesting or using the Permittee's property. However, late-successional forest habitat along the Cowlitz River and Mayfield Lake adjacent to the Permittee's Highway 12 parcel is currently suitable for eagle use. The habitat is present as a Shorelines of the State riparian buffer adjacent to the Highway 12 parcel. Riparian areas designated as a Shorelines of the State, under the Revised Code of Washington (RCW) 76.09.910 (Shoreline Management Act), are generally associated with lakes, reservoirs and large streams. These areas are protected by buffers up to 200 feet in width with little or no forest management activities permitted. This shoreline buffer will remain as a late-successional forest for the term of the Plan, and is expect to remain intact as a forested Shoreline of the State after the Plan expires. The position of the shoreline management buffer along Mayfield Lake is situated adjacent to commercial forest lands under private ownership and or administered by Tacoma City Light, that are mixed with a matrix of forest lands managed by the Washington Department of Natural Resources under their Habitat Conservation Plan (1997).

Baseline determination. Currently, there is no known occupancy by bald eagles on the Permitee's property. At the Highway 12 parcel, there is a single large (~50 inches dbh) Douglas-fir with a few live branches and a dead top. This tree is located approximately 0.5 miles from water. Other than this individual tree, approximately 2 acres of old-growth forest is located on the Permittee's parcel, and is contiguous with the Mayfield Lake shoreline buffer. Therefore, there are currently trees of

sufficient diameter to meet the average size requirements commonly used as nest trees by eagles. The other location where eagles may find suitable habitat is on the Kinzie Road parcel because of its connection to the wetland but the 45-year old residual trees are likely not large enough to accommodate nesting eagles. Although the potential habitat described may not provide nesting opportunities for eagles, they are large enough to function as perch trees for eagles, i.e. the single large tree on the Highway 12 parcel, the 2 acres of old growth adjacent to Mayfield Lake, and some of the trees greater than 40 years old near the wetland on the Kinzie parcel. This habitat constitutes the agreed upon baseline on the Permittee's ownership for bald eagles.

B. Listed Species Addressed under the Low-Effect HCP element of this Plan.

1. Lower Columbia River Steelhead

Status. The Lower Columbia River steelhead was listed as threatened in March 1998. Steelhead are rainbow trout that display an anadromous life history pattern. Steelhead inhabit Pacific coast streams of North America and northern Asia. The range of steelhead has decreased in North America, with the present range found north of San Francisco. In western Washington, steelhead are present in most Puget Sound drainages, including coastal streams, and tributaries of the lower Columbia River. Steelhead are known to occur in the Cowlitz River system which is part of the Lower Columbia River Evolutionary Significant Unit (ESU). Skook Creek, and its tributary flowing through the Permittee's ownership, are part of the Cowlitz River system. There are currently no known steelhead in the stream system on the Permittee's property, but Lower Columbia River steelhead can reasonably be expected to occur on the Permittee's ownership since an historic downstream blockage has recently been removed (see Appendix F).

Two forms of steelhead are found in western Washington, summer and winter steelhead. Steelhead are generally classed as summer steelhead, referring to when they return to fresh water to spawn, in this case, between May and October. Adult winter steelhead return to natal streams between November and April. The primary difference in the two runs of steelhead is the stage development of sexual maturity for the two runs at the time they enter fresh water, and the amount of residence time in fresh water before spawning. Summer steelhead usually reside in fresh water for several months to fully develop sexual maturity prior to spawning, while winter steelhead spend much less time in fresh water before spawning because they enter the fresh water environment in a sexually mature condition. While both winter and summer runs occur in the Cowlitz system, only winter run can reasonably be expected to occupy habitats downstream or within a portion of the Plan area (the Kinzie Road Parcel).

Juvenile steelhead rear in freshwater from one to two years and utilize a variety of habitats ranging from stream margins, as fry, to riffles, pools, and glides as they mature. A variety of behaviors and habitat utilization can occur depending on the quality and quantity of habitats available and competition within and between species. Generally, as steelhead juveniles approach smolt stage (pre-smolt) they emigrate from smaller streams to main stem systems as they journey toward the ocean and transition from freshwater to marine fishes (smoltification) to complete the next phase of their life cycle. Residence in the ocean can range from 1 to several years, although it is most

common for steelhead to reside in the ocean for 2 or 3 years. After they mature, they leave the open ocean feeding areas and migrate to their natal streams to spawn. Factors influencing the overall health of this species include degradation of stream habitat; predation by native and non-native fish species; excessive recreational harvest; droughts, floods, and unfavorable ocean conditions.

Current Habitat Conditions. Skook Creek tributary, located at the Kinzie Road parcel, is a seasonal stream containing water from November through May, in an average year. It was sampled for fish presence during November, 1996, at which time the water was flowing but no fish were found in the creek. The Kinzie Road parcel contains about 1 acre of a 4-acre wetland with approximately 1,750 feet of a seasonal stream flowing through the eastern portion of the parcel into the wetland. Based on a field review by FWS fish biologists conducted on February 28, 2000 (Appendix D), this reach of stream was determined to be non fish-bearing for the 900-foot section upstream from the small, gravel road that bisects the Kinzie Road parcel and have the potential to be fish-bearing for the 850-foot section downstream from the road and entering the wetland. A short reach (< 50 feet) of a perennial stream flows from the wetland, leaves the Permittee's parcel, and drains into the Cowlitz River about 1.5 miles below the parcel. The stream reach immediately upstream from the wetland (first 100 feet) and the small reach that forms the wetland's outlet from the Permittee's parcel are actually part of the wetland complex.

The section of the Skook Creek tributary having the potential to be fish-bearing is described above in section III, C. Kinzie Road Parcel. In summary, the stream is seasonal flowing from November to May, 1-1/2 - 2 feet wide, less than 2 feet bankfull depth, very low gradient, with a clay substrate and adjacent riparian vegetation dominated by reed canary grass, rushes, willows, native rose, and dogwood. There are few mature conifers within 50 feet of the stream; most of the trees that comprise the riparian zone are ash, oak, aspen and alder scattered singly or in clumps of 2 to 5. There are stretches of stream with no mature trees in the adjacent riparian or upland areas, only understory vegetation ranging from 3-6 feet in height composed of willow, native rose, and dogwood which entirely shade the stream. There are two larger patches of deciduous trees along the fish-bearing stream; one approximately 100 wide near the road, and a narrower patch near the wetland. Young plantation lodgepole pine (8 years old) are present midway between the road and the wetland starting about 20 feet from the stream bank. There is no woody debris in or adjacent to the stream.

The potentially fish-bearing reach of the Skook Creek tributary does not presently provide spawning habitats and can reasonably be expected never to provide them. Suitable spawning substrates will likely not develop due to the fine sediments in the bank and bed and no potential for recruitment from upslope sources. Adult steelhead, may, however, be expected to be present soon, since the fish passage has been recently restored. This possibility is difficult to estimate and may depend on escapement levels in the Cowlitz system and the willingness of adults to negotiate the wetland complex and locate this stream inflow. Juvenile steelhead, recruited from downstream areas, may possibly occupy this reach during winter months and may also occupy the wetland downstream. As with adults, utilization is difficult to estimate and depends, among other things, on abundance, competition with other fishes (e.g. coho salmon and cutthroat trout), location of the stream inflow, and the quantity and quality of habitats in the wetland complex. Rearing steelhead

are known to occupy backwater and wetland complexes and may reasonably be expected to occupy habitats in the wetland to a greater level than those provided in the inflow stream reach.

For purposes of this Plan, the Permittee agrees to implement the enhancement activities and conservation provisions for the duration of the Plan which will result in functional riparian habitat conditions in the future, i.e. the riparian habitat on the potentially fish-bearing stream will improve from current habitat conditions.

C. Proposed, Candidate and Unlisted Species of Concern Covered Under The Candidate Conservation Agreement With Assurances Element of this Plan

1. Coastal Cutthroat Trout

Status. Coastal cutthroat trout are generally the smallest of the *Oncorhynchus* species. Unlike other *Oncorhynchus* species (Pacific Salmon and steelhead), coastal cutthroat rarely remain in marine or estuarine areas over the winter, and do not make extensive ocean migrations. Also unlike most Pacific salmon, coastal cutthroat do not die after one spawning period, and have been known to spawn each year for more than six years.

Coastal cutthroat trout are known to occur in the Cowlitz River system which includes Skook Creek. Thus, cutthroat trout may reside in the wetland at the Kinzie Road parcel, although, the wetland has not been surveyed and their presence is unknown. The Skook Creek tributary is a seasonal stream containing water from November through May in a typical year. It was sampled for fish presence during November, 1996, at which time the water was flowing but no fish were found in the creek. The Kinzie Road parcel contains a 4.3 acre wetland with an approximately 1,750 foot reach of a seasonal stream flowing through the eastern portion of the parcel into the wetland. A short reach (< 50 feet) of a perennial stream flows from the wetland, leaves the Permittee's parcel, and drains into Skook Creek. The small reach of perennial stream that drains from the wetland, in addition to the portion of the wetland where it transitions into the seasonal stream is actually part of the wetland complex that is buffered with young and mature conifers and hardwoods.

The condition of the stream and wetland, as well as the adjacent vegetation and road condition, is described above in section III.C, Kinzie Road Parcel and in the Steelhead baseline determination. Although coastal cutthroat trout are not known to be in this stream/wetland system, it is believed that they could inhabit the system under current conditions during winter months.

2. Oregon Spotted Frog

Status. The Oregon spotted frog is a Federal Candidate species being considered for listing as threatened or endangered under the ESA. It is listed as an endangered species by the State of Washington (WDFW 1998). Historically, the range of the Oregon spotted frog in Washington State was distributed through the lowlands of the Puget Trough from the Canadian border south to

Vancouver, Washington, and east into the southern Washington Cascades (McAllister et al. 1993; McAllister 1995; McAllister and Leonard 1997). It has been estimated that this species has been lost from over 90 percent of its original range (Hayes 1997). Currently, only four populations are known to occur in Washington: two in the south Puget Sound lowlands (Dempsey Creek and Beaver Creek) and two in the southeastern Cascade Mountains (Trout Lake and Conboy Lake) (McAllister and Leonard 1997). In Washington, the Oregon spotted frog has been documented historically in eleven localities in Clark, King, Klickitat, Pierce, Skagit, Snohomish, and Thurston Counties (Hayes 1997, McAllister and Leonard 1997) . Populations are currently known to occur only in Klickitat, Skamania, and Thurston Counties (Leonard 1997, McAllister and Leonard 1997).

This species is the most aquatic native frog found in our region and is nearly always found in or near perennial water bodies such as a spring, pond, lake or sluggish stream (Leonard et al., 1993). The Oregon spotted frog inhabits emergent wetland habitats, such as sedges, rushes and grasses, in forested landscapes, although it is not typically found under forest canopy. There is probably a relationship with fairly large marshes (approximate minimum size of 9 acres) that can reach suitably warm temperatures and can support a large enough population to persist despite high predation rates (Hayes 1994). Oregon spotted frog habitat includes zones of shallow water and abundant emergent or floating aquatic plants, which are used for basking and escape cover from predators (Leonard et al. 1993; Corkran and Thoms 1996; McAllister and Leonard 1997). Oregon spotted frogs, however, have been found in riparian forests and areas with dense shrub cover (McAllister and Leonard 1997). This species is not an old-growth forest obligate, but forested areas may represent important refugia from further population losses (Blaustein et al. 1995). Historically, this species was also associated with lakes in the prairie landscape of the Puget Sound lowlands (McAllister and Leonard 1997). Oregon spotted frogs have been documented at elevations ranging from near sea level in Washington and in western Oregon to approximately 5000 feet in the Oregon Cascades (Dunlap 1955, Hayes 1997, McAllister and Leonard 1997).

Oregon spotted frogs breed in shallow pools 2–12 inches deep that are near flowing water, or which may be connected to larger bodies of water during seasonally high water or at flood stage. Characteristic vegetation includes grasses, sedges, and rushes, although eggs are laid where the vegetation is low or sparse (McAllister and Leonard 1997). Oregon spotted frogs begin to breed by 3 years of age; males may breed at 1 year, but generally at age 2, and females breed by 3 years of age (McAllister and Leonard 1997). Male Oregon spotted frogs are not territorial and may gather in large groups of 25 or more individuals at specific locations (Leonard et al. 1993). Breeding occurs in February or March at lower elevations and in late May or early June at higher elevations, and may also vary with latitude (i.e., southern populations may breed earlier than more northern populations) (Leonard et al. 1993). Eggs are laid in shallow, often temporary, pools of water, which can result in high mortality rates for eggs due to desiccation and/or freezing (Leonard et al. 1993). Oregon spotted frogs experience high mortality rates at all stages of the life cycle (Licht 1974).

Studies have indicated that adult frogs move to remnant pools in response to reduced water levels from spring to summer and disperse from these pools during increased precipitation during September and October (Watson et al. 1998). Telemetered Oregon spotted frogs in a Washington study stayed within 2600 feet of capture locations, and one Oregon study indicated that adult frogs often move less than 300 feet between years (Hayes 1998; Watson et al. 1998). Overwintering sites are associated with springs or other locations with low-flow conditions, which may result from an

avoidance of sites that could freeze. Oregon spotted frogs apparently burrow in mud, silty substrate, or clumps of emergent vegetation when inactive during periods of prolonged or severe cold (Hayes 1994; McAllister and Leonard 1997).

Oregon spotted frogs have a number of documented and potential natural predators, including a variety of snake, bird, and mammal species (McAllister and Leonard 1997). Tadpoles may be preyed upon by numerous vertebrate predators including birds, snakes, newts, salamanders, and fish as well as some invertebrate species, such as beetles and leeches. Predation and competition with a number of non-native fish and bullfrogs, which have been introduced into the historic range of the Oregon spotted frog, have contributed to the decline of this species (Hayes 1994;; McAllister and Leonard 1997).

Limited distribution and isolation of Oregon spotted frog populations have prompted concern for this species' survival. Loss of wetland habitat (e.g., development, dams) and/or alteration of the character of wetlands (e.g., hydrological modifications, introduction of exotic plants such as reed canarygrass, grazing in some circumstances) have been the main reasons for decline of this species (McAllister and Leonard 1997). Other threats to this species include introduction of bullfrogs and predatory fishes and susceptibility to toxic chemicals.

Oregon spotted frogs are not currently present on the Permittee's property. However, suitable habitat for this species, including non-woody plants such as rushes, sedges and sluggish water, is available along the Skook Creek tributary during the winter, and year-long around the wetland found on the Permittee's Kinzie Road parcel. The Kinzie Road parcel contains a 4.3 acre wetland with an approximately 1,750 foot reach of a seasonal stream flowing through the eastern portion of the parcel into the wetland. A short reach (< 50 feet) of a perennial stream flowing from the wetland and the portion of the wetland where it transitions into the seasonal stream are actually part of the wetland complex. Although the seasonal stream is unlikely to be suitable habitat for the Oregon spotted frog, the wetland complex could function as suitable habitat. The condition of the stream and wetland, as well as the adjacent vegetation, is described above in section III.C, Kinzie Road Parcel and in the Steelhead baseline determination. Although Oregon spotted frogs are not known to be in this stream/wetland system, it is believed that they could inhabit the system under current conditions if they disperse to this area.

3. Van Dyke's Salamander

Status. The Van Dyke's salamander is a Federal species of concern and a state candidate in Washington. Van Dyke's salamander is endemic to Washington, occurring in three population centers: the Cascade, Willapa, and Olympic Ranges (Leonard et al. 1993). In the Cascade Range, it is known from 26 sites west of the crest to the Puget Trough, from central Skamania County in the south to the north end of Mt. Rainier in the north (Jones 1998). Populations are patchily distributed and of low density; much potential habitat appears to be unoccupied (Blaustein et al. 1995; Jones 1998). They range from sea-level to approximately 3,700 feet elevation near northwest Mount Rainier.

Van Dyke's salamanders are most commonly associated with headwater streambank or seep habitats, often in mature and old-growth coniferous forests (WDW 1991; Jones 1998). The Van Dyke's salamander is considered to be the most aquatic species of woodland salamander (Leonard et al. 1993); it has also been collected at considerable distances from free water, however, usually in microhabitats that retain moisture, such as north-facing slopes (Blaustein et al. 1995; Jones 1998). The species is typically located in the splash zone of creeks under rocks, logs, and wood debris (Leonard et al. 1993). It has also been found in wet talus, forest litter, lava tubes, and along montane lake shores (WDW 1991; Jones 1998). Two nests have been reported for this species: one was inside a partially rotten log alongside a stream (Jones 1989), another was under a moss-covered stone (Nussbaum et al. 1983).

Limited distribution and isolation of Van Dyke's salamander populations have prompted concern for this species' survival. Its apparent association with riparian habitats in mature and old-growth forests led to this species' inclusion in the list of Survey and Manage species in the Northwest Forest Plan (USDA and USDI 1994b). Lehmkuhl et al. (1991) compiled a list of species associated with late-successional Douglas-fir forests in the Pacific Northwest and modeled the risk of local extinction for each species from habitat loss or fragmentation. This model was based on frequency of occurrence, abundance, body size, and vagility of various species. The Van Dyke's salamander was determined to be a species at high risk (score of 9, on a scale of 1 to 10, with 10 being the highest). Similarly, Thomas et al. (1993) identified this as a high-risk species, closely associated with old-growth forest conditions. The principal management recommendation of WDW (1991) is the maintenance of riparian corridors along all stream types, but especially Type IV and V Waters. Additional recommendations exist for protection of wet talus where the species is known to occur.

There are no Van Dyke's salamanders currently known to occur on the Permittee's property, or in the vicinity of the Permittee's property (WDNR, database 11/20/97). The only potentially suitable habitat on the Permittee's property is located on the Kinzie Road parcel and possibly in the old forest located on the Highway 12 parcel, beneath bark on fallen trees, since there are no seeps near talus or rock faces adjacent to stream courses for this species to occupy as habitat. The seasonal stream does not contain splash zones or waterfalls and thus the likelihood of this species occupying the Tagshinny Tree Farm is quite low.

4. Northwestern Pond Turtle

Status. The northwestern pond turtle is listed by the State of Washington as an Endangered species (WDFW 1999b), and is designated as a Federal species of concern. The Service was petitioned in 1992 to list the northwestern pond turtle, but since the species still occurred in 90% of its original range and it was estimated that it was not likely to become extinct in the foreseeable future, the Service determined that a listing was not warranted at that time.

The range of the northwestern pond turtle extends from the Puget Sound lowlands in Washington south to the Sierra San Pedros Martirs in Baja California Norte (Hays et al. 1999). Most populations occur west of the Sierra-Cascade Crest. Documented observations of northwestern pond turtles in Washington appear to be clustered around the southeastern edge of Puget Sound and along a small portion of the Columbia River (Nussbaum et al. 1983; WDW 1993). Populations

are confirmed only in Klickitat and Skamania counties, with recent individual sightings documented in Pierce and King counties (WDW 1993). Historical records also exist in Clark and Thurston Counties (WDW 1993). A single historic location is known from south-central Lewis County, in Salmon Creek about 8 miles south of the Kinzie Road parcel. A discussion with Kelly McAllister, Wildlife Biologist with WDFW (pers. comm.), indicated that it was an unusual observation and that no additional occurrences of the species have been found in Lewis County.

The western pond turtle forages in marshes, sloughs, moderately deep ponds, and slow-moving portions of creeks and rivers usually associated with emergent vegetation. Resting habitat includes emergent basking sites such as partially submerged logs, vegetation mats, rocks, and mud banks (Nussbaum et al. 1983). Evenden (1948) reported two records of pond turtles occurring in rapid-flowing, clear, cold, rock and gravel streams in the Cascade foothills. Pond turtles hibernate in bottom mud of streams or ponds, or on land up to 1,600 ft from water (Ernst and Barbour 1972; Holland 1989). Uplands adjacent to water bodies are utilized by turtles for dispersal, to nest, overwinter, and to aestivate (Hays et al. 1999). Northwestern pond turtles are found from sea level to 4500 feet, but all records in Washington are below 975 feet in elevation. In Washington, suitable habitat is a pond or lake. Northwestern pond turtles prefer waters with abundant aquatic vegetation and protected shallow water where juveniles rest and feed under cover. Adults appear to require logs, shallow banks and floating vegetation for basking. Females deposit eggs in soft soil on upland sites 144 to 600 feet from water (Nussbaum et al., 1983).

Breeding habitat for this species is primarily located near the margin of a pond or stream, but pond turtles have also been found hundreds of feet from water (Nussbaum et al. 1983). They are known to utilize meadows as well as young seral stages of most forest types including hardwoods, mixed hardwoods, and conifer forests. Average home ranges in California for adult males, adult females, and juveniles are 2.47, 0.62, and 1 acres, respectively (Holland and Bury 1998). Based on preliminary information from the Columbia Gorge population, home ranges in Washington may be larger (Hays et al. 1999).

The northwestern pond turtle is declining in numbers throughout its range and it is now only common to a fraction of its original range (Bury and Holland 1998, Hays et al. 1999). Declines in populations of northwestern pond turtles can be attributed to predation form various fish, avian and mammalian species; introduction of exotic species such as bullfrogs and largemouth bass; intentional or accidental killing of individuals by humans; the loss of suitable habitat; severe drought; and disease and parasites.

Only about 250 to 300 northwestern pond turtles are known to remain in the wild in Washington with the majority of these residing in the Columbia Gorge (Hays et al. 1999). A total of 26 individuals were released at the Puget Sound reintroduction site near Lakewood, Washington. Two adult males were also released into wetlands at Northwest Trek in 1996. Other than a few scattered individuals, it is thought that wild populations of the northwestern pond turtle have been effectively extirpated from the Puget Sound lowlands, since no breeding population of wild turtles has been located since the early 1980's (Hays et al. 1999).

There are no northwestern pond turtles currently known to occupy the Permittee's property. There have been no recent records of northwestern pond turtles occupying lowland habitat in

Washington, and only one known historic observation from Lewis County. However, suitable habitat does exist on the Permittee's property in the form of the 4.3 acre wetland located at the Kinzie Road parcel, although the Permittee only has control of approximately 1-1.5 acres of land adjacent to the wetland. The wetland is well buffered with mature conifers and a low density of red alder. The condition of the wetland, as well as the adjacent vegetation, is described above in section III.C, Kinzie Road Parcel and in the Steelhead baseline determination. Although northwestern pond turtles are not known to be in this stream/wetland system, it is believed that they could inhabit the system under current conditions if they ever disperse to this area.

5. Great Blue Heron

Status. Great blue heron breeding areas are a Washington state priority habitat (WDW 1991). This WDFW designation is classified as a criteria 2 species. Criteria 2 species are those species that aggregate (live in colonies) and are susceptible to disturbance. This species has no Federal status. The great blue heron occurs throughout southern Canada, the United States, and Mexico. It occurs year-round along the west coast, from southern Alaska to the tip of Baja California. The great blue heron is common in marshes, mud flats, and agricultural areas at low to mid-elevation on both sides of the Cascade crest in Washington state. West of the Cascade crest, great blue herons occur in all vegetation zones below the silver fir zone. Along river valleys they may be found up to fairly high elevations (e.g., along the Skagit River near Ross Lake in Whatcom County). They also occur at Cle Elum, Kachess, and Keechelus lakes in Kittitas County, but these birds may not be breeding (Smith et al. 1997).

Great blue heron nest colonially in tall deciduous trees or conifer trees near water and disperse to feeding areas. After eggs are laid, adult great blue herons are attentive to their young and susceptible to disturbance until young are fledged, which is about July 1 at the latitude of Washington (Butler 1992).

Great blue heron feeding areas can include irrigated agricultural fields, irrigation canals, and the marshy edges of ponds, lakes, and estuarine areas (Smith et al. 1997). Documented distances from an active nesting colony to a foraging area range from 13 to 18 miles, but most feeding areas are located within 2.5 to 3 miles of the colony (Short and Cooper 1985).

Human disturbance has been documented to be a major cause of nest abandonment by great blue herons, causing colony-wide nest failures (Smith et al. 1997). Herons that have experienced few past disturbances are not likely to tolerate human activities near their colonies (Bowman and Siderius 1984). In contrast, some studies suggest that herons that are frequently or consistently exposed to disturbance may habituate to human activities (Shipe and Scott 1981; Webb and Forbes 1982; Vos et al. 1985; Calambokidis et al. 1985). Thus, herons nesting in different locations may have different tolerance levels to human activity, with colonies located close to human activity responding less to disturbance than those in more remote areas (Simpson 1984).

Great blue herons have in the past (prior to 1997) occupied the standing dead trees at the edge of the wetland located at the Kinzie Road parcel. In the past 3 years, there has been no observed occupancy by great blue herons. Prior to 1997, up to 4 great blue heron (2 pair) have been

observed at the 4 acre wetland located near the Kinzie Road parcel, and it is expected that they will occupy the forested buffer sometime again in the future. The wetland covers approximately 4 acres and is vegetated along its margin with mature conifers and some red alder. This forested buffer has a conifer density of greater than 120 trees per acre and extends for approximately 100 feet from the wetland margin. The wetland on approximately 1-1.5 acres of the Kinzie Road parcel, with numerous mature trees around the perimeter and standing dead trees in the water, is suitable habitat for great blue herons.

6. Pileated Woodpecker

Status. The pileated woodpecker is a candidate for listing by Washington state (WDFW 1999b) and has no Federal ESA status. The pileated woodpecker occurs from northern British Columbia south through the Pacific states to central California; in the northern Rockies through Idaho and western Montana; across southern Canada to Nova Scotia; and south to the Gulf Coast and Florida. The pileated woodpecker is found throughout forested areas of Washington State, primarily at low to moderate elevations (Smith et al. 1997). They can exist in the city when there are suitable trees, and are found in several parks in Seattle including Seward Park, Discovery Park, and Camp Long. The species does not occur in the dry, non-forested portions of the Columbia Basin (Smith et al. 1997).

Pileated woodpeckers typically utilize mature and old-growth forests and second-growth forests with substantial numbers of large snags and fallen trees. Optimum habitat appears to be conifer stands with more than two canopy layers. West of the Cascade crest, pileated woodpeckers generally breed in forest stands older than 70 years, though they can use younger stands if large snags are present (Mellen et al. 1992). They excavate large nest holes (three holes per year per pair on average) in snags or living trees with dead wood, generally excavating through hard outer wood into rotten heartwood. The range of tree diameters used for nesting on the Olympic Peninsula was 25 to 45 inches dbh (Aubry and Raley 1992). In a study in Oregon, pileated woodpeckers showed a preference for foraging in forests 40 years or older and in riparian zones (Mellen et al., 1992). Typical tree species used as nest sites include western larch, black cottonwood, and ponderosa pine east of the Cascade crest, and Douglas fir, grand fir, and western white pine, where available, west of the Cascade crest (Bull 1987; Mellen 1987). Most nest trees are hard snags with bark and broken tops (WDW 1991). Pileated woodpeckers also use tree cavities for roosting.

Pileated woodpeckers forage mainly by excavating wood and chipping bark from large-diameter dead and down logs, stumps, snags, and live trees. They feed primarily on ants, beetle larvae, and other insects (Bull et al. 1992). West of the Cascade crest, they spend most time foraging in forest stands older than 40 years, and in deciduous riparian areas (Mellen et al. 1992). They seldom forage in clearcuts, but they are known to feed in timber harvest debris in shelterwood cuts.

A query of the WDFW database, conducted on November 20, 1997, indicated that no pileated woodpeckers are known to occur in the vicinity of the Permittee's property. However, pileated woodpeckers have been observed foraging at both the Home and Kinzie Road parcels, although they are not known to currently occupy nests on any of the Permittee's parcels. Opportunities for foraging exist in the form of standing dead trees. Forest stands on the property are nearing mature forest age and, with the tree thinning that has been implemented on some of the parcels, the forests

are beginning to differentiate and become multi-layered and, particularly those with very large trees or snags, may be suitable for use as nest or roost sites by pileated woodpeckers. There are no riparian zones with mature trees for use as foraging areas but there is 31 acres of trees that are 40-60 years of age scattered across 4 of the 5 parcels. These stands may provide suitable foraging opportunities. The 2 acres of trees 80+ years old on the Highway 12 parcel are large enough to be suitable as potential nest and roost sites.

7. Osprey

Status. The osprey is not a listed species, candidate species, or species of concern at the federal level in Washington. The osprey is a "monitor species" at the state level in Washington and is on state Priority Habitat and Species list (WDW 1991). This designation by Washington State classifies the breeding area and the species as a species criteria 3 (WDW 1991). Criteria 3 species are native and non-native wildlife species of recreational and commercial importance that are vulnerable to habitat loss and degradation. The species is also recognized for tribal ceremonial and subsistence purposes. The osprey breeds along the sea coasts, rivers, and lakes of coastal North America, and winters in the West Indies, Central America, and South America (WDW 1991). In Washington, the osprey is common along large water bodies (the ocean, lakes, and large rivers) in lower-elevation forested landscapes throughout the state except for the Columbia Basin (Smith et al. 1997). Ospreys are less common at higher elevations, but have been found nesting as high as Ross Lake (1,600 ft elevation), and foraging in the Snoqualmie Pass and White Pass areas (Smith et al. 1997).

Ospreys build large nests in live trees, on dead snags with flat, broken tops, or on artificial nest platforms, always near water (Smith et al. 1997; WDW 1991). Nest trees are typically as tall or taller than surrounding structures. Nests are platforms of sticks at the top of large trees (dbh range from 16-33 inches), generally found within 328 feet of water, although they are occasionally found in forests. Nests can be semi-colonial if prey species are abundant. Osprey pairs apparently vary in their tolerance of human disturbance (Van Daele and Van Daele 1982). Human activities initiated during early nesting and incubation are probably most disturbing to ospreys (WDW 1991). Disturbance during this period may cause adults to leave the nest frequently or for extended periods, which can be fatal to embryos and nestlings (Van Daele and Van Daele 1982; Levenson and Koplin 1984).

Ospreys forage in shallow waters of rivers, lakes, reservoirs, estuaries, and salt marsh ponds. This species feeds almost exclusively on live fish captured at the water's surface. Although nests are generally built near productive water bodies, osprey hunting ranges have been estimated to extend as much as 6 to 9 miles from the nest (Henny 1986; Poole 1987; Sidle and Suring 1986).

For many years, an osprey pair has been observed nesting in the old-growth trees of the Shoreline Buffer adjoining the Highway 12 parcel. Although the most recently occupied nest blew out this past year, ospreys will continue to have these old-growth trees and a secure forest available to them for the Plan term. A query of the WDFW data base (November 20, 1997) revealed that no osprey are known to nest on or in the vicinity of any parcels owned and managed by the Permittee. However, osprey have been observed taking fish from a small, man-made pond at the Permittee's Home parcel, although these birds are thought to nest elsewhere. The wetland at the Kinzie Road

parcel also may be suitable for osprey feeding and nesting. Several trees on the Permittee's ownership may be large enough to accommodate a platform-based nest if and when the top of the tree breaks off. The wetland could provide feeding opportunities if, in fact, it is occupied by fish, e.g. coastal cutthroat trout and/or coho salmon.

8. Northern Goshawk

Status. The northern goshawk is a Washington state candidate for listing as threatened or endangered. The FWS found that the listing of this species as endangered or threatened is not warranted (DOI 1998), however, at the regional level it is considered a Federal species of concern.

Northern goshawks have been observed using a variety of forest types, however Austin (1994) found a close correlation between goshawks and closed-canopy mature and old-growth forests. Specifically, in the Pacific Northwest, goshawks are associated with mature and late-successional conifer forests and are most abundant in old-growth forests (Thomas et al., 1993). However, goshawks are known to nest in large industrial forest stands (500+ acres) of young conifers (41-55 years old) in Lewis County, Washington (Bosakowski et al. 1999).

On the Olympic Peninsula, nest trees used by northern goshawk ranged from 8 to 58 inches dbh. In Lewis County, Washington, nest trees on industrial forest lands were in the dominant trees averaging 22 inches dbh, where stand dbh averaged 10.1 inches (Bosakowski et al. 1999). Where nest trees are available, the home range size is determined by the prey species density (Reynolds et al., 1992). Northern goshawk prey on a variety of small to medium-sized animals including American robin, Stellar's jay, grouse, voles, Douglas squirrel, mountain beaver and snowshoe hare. Prey can be found in a variety of forest types and successional stages and along forest edges.

No northern goshawk have been observed or are currently known to nest on the Permittee's property. A query of the WDNR data base, completed on November 20, 1997, indicated that goshawk may occur in the vicinity of the Permittee's parcels. A variety of forest types and ages currently exists, and forest edges are available for foraging opportunities, making the Tagshinny Tree Farm potential suitable habitat for the northern goshawk. Closed-canopy forests with sufficient sized trees currently exist on all the Permittee's parcels, where forests of greater than 40 years of age are currently present on a combined total of 33 acres. Currently, nesting opportunities are likely only available on the Home site because of the size of the parcel which may contain trees large enough for nesting, and possibly on the 2 acres of the Highway 12 parcel near the power line right-of-way because it contains large trees contiguous with adjacent old forest habitat.

9. Olive-sided Flycatcher

Status. The Olive-sided flycatcher is currently a Federal species of concern in Washington. The olive-sided flycatcher is not listed as an endangered species, threatened species, or candidate species in Washington State nor is it listed as a priority species by WDFW. The olive-sided flycatcher breeds from Alaska east through much of Canada to the Great Lakes region and the northeastern

United States, and southward through the mountains of the Pacific Northwest, the Rocky Mountains, and the mountains of California. The species winters in montane Central and South America from southern Mexico through Colombia and Venezuela, south to Peru (Ehrlich et al. 1988). The olive-sided flycatcher occurs in virtually all forested areas of Washington State (Smith et al. 1997).

The olive-sided flycatcher inhabits primarily mature forest, old-growth forest, and wet conifer forest, especially those forests with an abundance of snags (Altman 1997; Ehrlich et al. 1988; Sharp 1992). Optimal habitat is natural or man-made edges and forest openings where tall trees and snags are present for singing and foraging perches, and varying sized hemlocks and true fir are present for nesting. This may include harvest units, post-fire habitat, natural edges of bodies of water or old-growth forest with extensive areas of broken canopies. Another frequently reported habitat association of the olive-sided flycatcher is along the wooded shores of streams, lakes, rivers, beaver ponds, bogs, and muskegs, where natural edge habitat occurs and standing dead trees are often present (reported in Altman 1997). Olive-sided flycatchers were found to occur in relatively similar abundance in young, mature, and old-growth forest stands in the southern Washington Cascades (Carey et al. 1991; Gilbert and Allwine 1991a; Manuwal 1991; Ruggiero et al. 1991). This species may also use mixed woodlands near edges and clearings. Smith et al. (1997) consider the olive-sided flycatcher an edge species that occurs throughout forested areas where forest stands are adjacent to open areas, such as clear-cuts, burns, montane meadows, and western Washington agricultural areas.

The most important variable for nest success in managed early successional forest may be the presence of snags >40 feet tall (Altman 1999). Successful nesting in harvest units occurs in both small clumps of trees and with canopy closure <50% and in singular, dispersed trees through the harvest unit. Nests are often located high in conifer trees, usually on a horizontal branch far from the trunk. Olive-sided flycatchers typically forage by sallying for flying insects from prominent, high hunting perches (live trees or snags) with a view of openings (Altman 1997; Ehrlich et al. 1988; Marshall 1988; Sharp 1992).

There are currently no olive-sided flycatchers known to occupy the Permittee's property. Habitat for this species, in the form of forest edge, mature conifer stands, and a few standing dead trees is available on the Permittee's parcels. Suitable habitat likely exists on the Home and the Kinzie Road parcels where 45 year old trees are adjacent to regeneration harvests, as well as standing dead near the wetland. Thus, it is possible that the olive-sided flycatchers may use this land and habitat in the future.

10. Long-eared Myotis

Status. Long-eared myotis are designated as a Federal species of concern. This species is not listed by WDFW as a priority species. The long-eared myotis occurs in western North America, from British Columbia, southern Saskatchewan and Alberta south along the Pacific coast to Baja California and east to Montana, Idaho, the Dakotas, Utah, Nevada, Wyoming, Colorado, New Mexico and Arizona. Long-eared myotis are generally distributed throughout Washington, but may be more common in drier east-side conditions, or in habitat that supports lodgepole pine. They

have been observed in humid coastal forests to semi-arid grasslands, however, in the drier part of their range they are probably limited to water courses.

Long-eared myotis have been found in a variety of habitats such as mature and immature conifer, alder/salmonberry, arid grasslands, and shrub-steppe (Maser et al. 1981; Nagorsen and Brigham 1993). Cross (1976) found them across southern Oregon in mixed conifer, ponderosa pine, and shrub-steppe habitats. Perkins (1982, 1983) found long-eared myotis in agricultural and riparian areas, oak woodlands, mature conifer forest, Douglas-fir forest (all age classes), and old-growth true fir forest in western and northwestern Oregon. In the southern Washington Cascades and the Oregon Coast Range, Thomas (1988) detected Myotis bats (including long-eared myotis) more frequently in old-growth Douglas-fir forests than in mature and young Douglas-fir forest. In Washington, myotis species were detected 2.7 to 5.7 times more often in old-growth forests than in young and mature forests (Christy and West 1993) where roost sites are plentiful.

Long-eared myotis use buildings, bridges, rock crevices, pieces of loose bark attached to trees, and snags as day roosts (Maser at al. 1981; Christy and West 1993) Female long-eared bats primarily used conifer stumps as day-roosts in watersheds dominated by younger forest on the western slop of the Cascade Mountains, Oregon (Waldien et al. 2000). Maternity roosts and hibernation sites have been documented in buildings, caves, mines, and rock fissures (Cross 1977; Cross and Schoen 1989; Perkins et al. 1990; Nagorsen and Brigham 1993). Maternity colonies of 12 - 30 individuals have been found in buildings and hollow trees (Maser et al. 1981; Waldien et al. 2000).

Long-eared myotis are insectivores. Major food items in two Oregon studies were found to be moths, flies, beetles, bees, and ants (Whitaker et al. 1977; Whitaker et al. 1981). The species obtains its prey by aerial foraging and gleaning from foliage. Feeding rates of myotis were found to be 10 times greater over water than in the forest interior (Christy and West 1993).

The amount of ecological information currently published about long-eared myotis and their population status in Washington State is limited. However, according to Johnson and Cassidy (1997), the long-eared myotis "is said to be the most abundant bat in lodgepole pine forests in Washington." The species may be relatively more abundant on the east side of the state than the west (Johnson and Cassidy 1997).

Long-eared myotis are not currently known to occupy the Permittee's property, but may occur in the vicinity of the Permittee's property (WDFW database, 11/20/97). Habitat and structures to support the species are present on the Permittee's parcel. Trees with cavities are present in some of the standing dead trees found on the Permittee's parcels but tree decadence is minimal so that bark roosts are not likely to occur on the ownership. There is an abundance of Douglas fir stumps, some of which are likely to be used by long-eared bats, i.e. are 25-plus inches dbh. Conditions for prey of long-eared myotis are present on or adjacent to the parcels in the form of small ponds, the wetland, and Mayfield Lake. Thus, there is moderate likelihood of finding the species on the property. Approximately 45 year old forest stands with standing dead trees, with nearby water sources, are adjacent to forest openings that can be used for foraging by bats, at the Home, Highway 12, Winter Road and Kinzie Road parcels.

11. Long-legged Myotis

Status. Long-legged myotis are designated as a Federal species of concern. This species is not listed by WDFW as a priority species, however, it is designated as a monitor species. The long-legged myotis occurs in western North America from southeast Alaska and western Canada to central Mexico. The long-legged myotis can be found throughout Washington except for the driest parts of the Columbia Basin (Barbour and Davis 1969; Johnson and Cassidy 1997). According to Johnson and Cassidy (1997), the long-legged myotis "is one of the few myotis bats that regularly occurs at high elevations in cool, wet forests."

The long-legged myotis occurs in a variety of habitats such as immature and mature conifer forests, alder forests, and arid range lands (Maser et al. 1981; Nagorsen and Brigham 1993). Foraging habitat includes all seral stages, but there is a preference for young forest (Brown 1985); they also forage over open water (ODFW 1996). Cross (1976) found them across southern Oregon in all major habitats outside the coastal zone, including oak woodland, mixed evergreen, mixed conifer, ponderosa pine, and shrub-steppe; greatest numbers were encountered in ponderosa pine. Perkins (1982, 1983) reported them from agricultural and riparian areas, oak woodlands, Douglas-fir forest (all age classes), and old-growth true fir forest in western and northwestern Oregon. In the southern Washington Cascades and the Oregon Coast Range, Thomas (1988) detected long-legged myotis more frequently in old-growth and mature Douglas-fir forests than in young Douglas-fir forest. He hypothesized that the higher activity in old-growth stands "likely reflects an increased diversity and/or abundance of day roosts compared with young and mature stands" (Thomas 1988).

Roosts are located in buildings, bridges, crevices in rock cliffs, fissures in the ground, snags, and under large pieces of still-attached tree bark (Nagorsen and Brigham 1993). In Washington, myotis species were detected 2.7 to 5.7 times more often in old-growth forests than in young and mature forests (Christy and West 1993) where roost sites are plentiful. The long-legged myotis uses buildings, rock crevices, and trees for maternity colonies (Barbour and Davis 1969; Nagorsen and Brigham 1993). Female long-legged myotis select large snags that extend above the canopy for day roosts (Ormsbee and McComb 1998). Maternity colonies may contain several hundred individuals (Maser et al. 1981).

The long-legged myotis is insectivorous, with moths, flies, bugs, and beetles forming the bulk of the diet (Whitaker et al. 1977; Whitaker et al. 1981). Thomas (1988) found that feeding rates for Myotis bats (including long-legged myotis) in the southern Washington Cascades and Oregon Coast Range averaged 10 times higher over water than in forest stands.

The amount of ecological information currently published about long-legged myotis and their population status in Washington State is limited. Long-legged myotis are not currently known to occupy the Permittee's property, but may occur in the vicinity of the Permittee's property (WDNR data base 11/20/97). Habitat for the species is available on the Permittee's property; the combination of forests, retention of all safe snags and green recruitment trees over the term of the Agreement, clearcuts and wetlands provides adequate conditions for their presence. Approximately 45 year old forest stands with standing dead trees, nearby water sources, are adjacent to forest

openings that can be used for foraging by bats, at the Home, Highway 12, Winter Road and Kinzie Road parcels.

12. Pacific Townsend's Big-eared Bat

Status. The Pacific Townsend's big-eared bat is a Federal species of concern and is a candidate for listing by the state of Washington. Townsend's big-eared bat occurs in western North America from southern British Columbia to northern Mexico and as far east as South Dakota, Oklahoma, and Texas (ODFW 1992). A narrow range extension extends into the central Atlantic states (Appalachian Mountains). The species has been documented from a number of locations throughout Washington at elevations lower than 9,600 ft, except in the driest portions of the Columbia Basin, but they occur chiefly at low to mid-elevations (Johnson and Cassidy 1997).

Townsend's big-eared bat is essentially non-migratory and can occur in nearly any forest type as long as suitable roost, nursery, and hibernation sites are present (WDW 1991). In a northwestern Oregon study, these bats were captured (by mist nets) only in mature or old-growth Douglas-fir forests (Perkins 1983). These bats use caves, mines, buildings, and the undersides of bridges with appropriate temperature and humidity for maternity roosts, day roosts, and hibernation (Christy and West 1993). However, caves within clearcuts may not be suitable because the lack of vegetation can affect the cave's microclimate (WDW 1991). Big-eared bats are known to use hollows in standing dead trees and tall stumps on occasion.

According to Johnson and Cassidy (1997), "this bat is relatively widespread [in Washington], but there is much concern about the species' future because P. townsendii bats in hibernacula and maternity colonies are sensitive to disturbance." Townsend's big-eared bats prefer cold areas near the entrance of caves as hibernacula (Barbour and Davis 1969; Humphrey and Kunz 1976). Thus, Townsend's big-eared bats hibernating in caves or mines are easily aroused by disturbance, and frequent arousal is known to compromise their ability to survive the winter. Maternity colonies are normally in caves, and disturbance has been known to cause females to abandon their young. In addition, timber harvest activities around the mouth of a cave may disturb roosting, nursing or hibernating bats, causing them to die or abandon the cave. Townsend's big-eared bats are particularly sensitive to arousal during hibernation, as this can deplete necessary fat reserves and lead to death. Townsend's big-eared bats are also very sensitive to disturbance while day roosting because they hang directly from the ceiling of the roost and do not go into torpor during the day in summer colonies (Barbour and Davis 1969).

Food habits studies found that while Townsend's big-eared bat feeds on a variety of insects. Its primary prey items are moths (Whitaker et al. 1981) which are obtained both by aerial foraging and gleaning from foliage (ODFW 1992). Townsend's big-eared bats have been observed foraging in upland habitats (forest edges, roads, open areas within the forest) more often than over water (Christy and West 1993).

Townsend's big-eared bat are not currently known to occupy the Permittee's property, but may occur in the vicinity of the Permittee's property (WDNR database 11/20/97). Forest habitat suitable for Townsend's big-eared bat is available at the Home, Kinzie Road and Highway 12 parcel

in the form of standing dead, and some large, live trees which may provide potential roost sites. However, Townsend's big-eared bats are more likely to roost in caves, or mines, which are not found on the Permittee's property. Approximately 45 year old forest stands with standing dead trees are adjacent to forest openings that can be used for foraging by bats, at the Home, Highway 12, Winter Road and Kinzie Road parcels.

D. Unlisted Species Addressed under the Low-Effect HCP.

1. Lower Columbia River/SW Washington Coho Salmon

Status. Coho salmon are designated a candidate species by NOAA-Fisheries. Coho salmon occur along the Pacific coast from Monterey Bay, California to Point Hope, Alaska (Wydoski and Whitney 1979). The coho's candidate status applies to the Lower Columbia River/SW Washington ESU which encompasses the Cowlitz River system. Coho salmon are known to occur in this system and are expected to occur in Skook Creek and its tributaries.

Coho salmon, like all salmon occupying the eastern Pacific Ocean, are anadromous and return to their natal streams to spawn. Their life history is quite predictable. Juveniles spend approximately 18 months in freshwater and migrate downstream to the sea after their second spring. Coho salmon grow to maturity after spending approximately 18 months in the sea and then return to their natal stream. Two less common life histories may also apply to coho salmon. In some populations, a small percentage of coho (primarily males) return to spawn after only one summer in the sea. In some populations, some juveniles may spend an extra year rearing in fresh water before migrating to the sea.

Several factors may effect the survival of coho, either in the fresh water or marine environment. Factors in fresh water include loss and degradation of habitat, and predation, drought, and floods. Coho salmon principally spawn in smaller streams or tributaries, similar to Skook Creek and its tributary on the Permittee's property.

Currently no coho salmon use the small stream or wetland on the Permittee's Kinzie Road property. The Skook Creek tributary is a seasonal stream containing water from November through May in a typical year. It was sampled for fish presence during November, 1996, at which time the water was flowing but no fish were found in the creek. The Kinzie Road parcel contains a 4.3 acre wetland with an approximately 1,750 foot reach of a seasonal stream flowing through the eastern portion of the parcel into the wetland. A short reach (< 50 feet) of a perennial stream flows from the wetland, leaves the Permittee's parcel, and drains into Skook Creek. The small reach of perennial stream that drains from the wetland, in addition to the portion of the wetland where it transitions into the seasonal stream is actually part of the wetland complex that is buffered with young and mature conifers and hardwoods.

The condition of the stream and wetland is described above in section III. C., Kinzie Road Parcel and in the Steelhead baseline description and applicable to coho as well. Although coho salmon are

not known to be present in this stream/wetland system, it is believed that they will likely inhabit the system under current conditions since the perched culvert downstream has been removed.

As described for steelhead, spawning habitats for coho salmon are not present, nor are they likely to develop. Juvenile coho that rear in the wetland may seek out and occupy the short Skook Creek tributary inflow to the wetland but the level of utilization is difficult to predict. At present, this stream reach is simplified and contains none of the complex instream and margin habitats created by woody debris that juvenile coho are known to prefer. Over the plan term, instream habitats will likely become more complex and suitable for juvenile coho. The wetland area provides the greatest amount and quality of habitats for juvenile coho. Coho utilization of wetland and beaver-controlled complexes is well-documented and can reasonably be expected to be utilized to a greater level than the inflow stream.

V. CONSERVATION MEASURES AND ENHANCEMENT ACTIONS FOR COVERED SPECIES

This Section V contains the on-the ground measures that the Permittee must comply with so long as the Plan and associated permits remain in effect.

A. Introduction

Under the Plan -- as described in this Section V -- the Permittee will implement moderate-length rotations; develop and retain standing dead trees, green, recruitment trees, and large woody debris; provide forested habitat; establish and retain protective riparian and wetland management zones; and provide a net benefit to species under FWS authorities that are covered by this Plan. The prescriptions for managing the varied habitat on the Permittee's property serve as the "cookbook" for how specific management activities will be implemented. The management of the parcels will have a dual purpose: 1) it will provide a commodity return to the Permittee and 2) it will enhance the current conditions of habitat, providing protection and conservation benefits to the species that may potentially use these parcels in the future. Enhancement and conservation measures also are expected to benefit species under the authority of NOAA-Fisheries. These measures will avoid, minimize and mitigate for "take" of species or adverse effects on their habitats that may incidentally occur as a result of the conduct of forest management activities.

B. Conservation Measures

1. Management Prescriptions by Habitat

The conservation measures are described separately by habitat category; similar habitat on each parcel will be managed in a similar manner. For management purposes, the habitats on the

Tagshinny Tree Farm have been categorized as follows: Upland Forest, Steep Slopes, Riparian Forests, Wetlands, Special Habitats, and future potential, eagle-nesting trees or spotted owl nesting trees.

a. Upland Forests

Appendices B and C describe the anticipated Harvest Plan and Forest Age Distribution by parcel, respectively. The Harvest Plan is the Permittee's current best estimate of the Tagshinny Tree Farm's future harvest schedule. The Harvest Plan may be changed over time based on silvicultural needs, market conditions, and/or the Permittee's objectives. For example, any acreage scheduled for harvest during a given ten-year period that is not harvested during that decade may be rolled over into a later ten-year period and is available for harvest in the later decade. As long as the Harvest Plan does not cause the future habitat conditions to fall below the established baseline habitat conditions, alterations to the Harvest Plan can be made by the Permittee without prior notice to the Services. However, the Permitee shall report any changes made in the Harvest Plan to the Services in the Permittee's annual report.

Currently, 25% of the Tagshinny Tree Farm is 20-plus years of age: 23% is in the 40-60 year age class; and approximately 2% is in the 80+ years age class (Table 3). Although the overall percentage of stands that are 40-plus years in age may drop from 25% in the first decade to 19% and 20% in the third and fourth decades, respectively, of the Plan term, overall habitat conditions will continue to improve throughout the Plan term. In addition to the other measures required by this Plan, there will be more acres in the older age classes throughout the Plan term than exist today. This will result in higher quality habitat for species that utilize larger trees for nesting, roosting and as a source of prey. For example, in the first and second decade, forested stands in the 40-60 year age class will be 23% and 22%, respectively. In the third decade, there is no acreage in this age class but 17% (23 acres) of the forested acres will be in the 60-80 year age class. From the fifth decade through the end of the Plan, 26% of the forested land will be at least 40 years of age, 5% of which will be in the 80+ age class, which exceeds the 2% of 80+ age class present at the outset of the Plan. Thus, the current agreed-upon baseline habitat conditions for listed species covered by this Plan that utilize forested habitats is represented by 19% (approximately 25 acres) of moderate quality forested habitat, which includes 2 % high quality forested habitat greater than 80 years of age. Over the term of the Plan, higher quality habitat is developed and some (6 acres, or 5%) of the best, in terms of age and structure, will be in place for the last 40 years of the Plan term.

Regeneration harvests planned to occur on the Permittee's property will be small, generally 12 acres or less in any one decade, although as much as 58 acres are expected to be harvested in the period 2050-2060. This unevenness in harvest level is the result of the existing age class distribution of stands on the tree farm. In the first four decades of the Plan term, approximately 32 acres of forest (24% of forested acreage) are planned for regeneration harvest. However, during the first decade of the Plan term, the Permittee currently expects to conduct only a single, 2-acre regeneration harvest of a "rotation-age" (40+ year old)stand on the Burchett parcel. Thus, during the first decade of the Plan term, over 90% of the forested acres greater than 40 years of age on the Tagshinny Tree Farm will continue to grow and develop structures beneficial to covered species that prefer mature forested stands. The majority of these stands (24 acres) are planned for harvest in decades three and four of the Plan term.

During the second half of the Plan term, approximately 100 acres will be harvested using regeneration methods. However, as stated above, there will always be forested stands present during this period that are at least 40 years old; ranging from 57% (76 acres in the 5th decade) to 20% (26 acres in the 8th decade) of the forested portion of the tree farm. Based on the Harvest Plan, it is anticipated that the Permittee's forested land will not fall below the condition of the current baseline at any time during the term of the plan.

Table 3. Anticipated percentage of forested ownership by age class by decade.

Decade	Percent of Forest Land by Forest Age Class				
	0-20 years	20-40 years	40-60 years	60-80 years	80+ years
2000 - 2010	75	0	23	0	2
2010 - 2020	70	6	22	0	2
2020 - 2030	6	75	0	17	2
2030 - 2040	13	67	6	12	2
2040 - 2050	18	6	71	0	5
2050 - 2060	15	13	67	0	5
2060 - 2070	50	14	6	25	5
2070 - 2080	59	15	10	11	5

The majority of the harvests planned during the first 40 years of the Plan term are expected to be commercial thinning operations. The average number of acres to be thinned will be approximately 7 acres per year during this period. An average of approximately 6 acres per year will be thinned during the final 40 years of the Plan -- i.e., during the years from 2040 - 2080. Thinning operations, leaving many large live green trees and standing dead trees, will result in stands with multi-layered canopies and complex structures suitable for wildlife habitat. Thinning the stands will allow the remaining trees to maintain diameter and height growth, expand their crowns, and yet will provide

small openings within the stand facilitating the development of understory shrub layers that will provide foraging and cover habitat for forest floor mammals and migratory birds.

Older, mature forests will receive some management in the first decade of the Plan term, primarily in the form of thinning. Management of these stands is intended to improve the growth of the stand by removing merchantable intermediate and co-dominant trees in order to improve the spacing within the stand and allow for some natural regeneration and the development of more understory shrub species in the lower canopy layers.

Subject to the limitations set forth below, when selecting timber for regeneration harvests, the Permittee will first select stands immediately adjacent to areas with the youngest timber within that parcel, except where that is infeasible due to operational limitations, or where another stand is more appropriate for harvest because of declining health of the stand or availability of an advantageous market. This will help maintain a low "edge-to-interior ratio" for blocks of mature forest, and may help to reduce the risk of wind-throw. However the foregoing priority for harvest unit selection shall not apply to stands immediately adjacent to one side of the fish bearing stream buffer where the youngest stand on the parcel is located on the opposite side of the stream. In those cases, harvests of the stand across the stream will be avoided, where practicable (in light of the Harvest Plan), until the stand adjacent to the stream buffer on the opposite side of the stream has reached the "stem exclusion" stage (approximately 12-15 years, but in no case later than 15 years following the year of reforestation).

Through the following measures, the Permittee will attempt to maintain and increase the current level of standing dead and fallen trees (down woody debris) on all parcels. Because of past management, there are few standing dead and fallen trees on the Permittee's property. However, the Permittee understands the value of these structures for wildlife and has committed to retain all existing dead and down trees for the term of the Plan, plus additional trees as described below.

- During all harvest operations, the Permittee will minimize disturbance to down woody debris to the extent practicable and as consistent with safety considerations. Any defective portions of merchantable trees and tops will be left on the forest floor. Cull material may be moved around within the stand to accommodate tree planting.

- At the time of regeneration harvest, the Permittee will leave, measured on average over the harvest unit, no fewer than three standing dead trees and four green recruitment trees for each acre harvested. Retained trees will be selected from the larger diameter classes of trees available. Except where harvest of dead trees is being done as part of a salvage operation or creates a safety concern, the Permittee intends to leave all standing dead trees. The long-term goal is to establish a combined total of seven (7) standing dead and green wildlife trees per acre that are greater than 10 inches dbh, where three of those seven (7) trees are greater than 14 inches dbh. In addition, when conducting regeneration harvests in stands 40 or more years old, two of the green trees retained per every 10 acres harvested will be greater than 20 inches dbh (unless no such trees are available).

- The Permittee will attempt to select leave trees so as to maximize wildlife values and minimize potential for windthrow. Generally, leave trees will be evenly or randomly distributed (clumped), particularly along ridges, the stream management zone, and forested edges where the likelihood of windthrow is low and where the retained trees will provide the greatest benefit to wildlife. Not every acre need have leave trees on it, but harvest units will average seven wildlife and green recruitment trees for each acre harvested. Except where not practicable, live and dead trees retained shall be located within 800 feet of other leave trees.

- When selecting standing dead trees to be retained during harvest operations, the Permittee will give preference to retaining trees more than 30 feet tall. In general, taller and larger diameter structures (whether standing dead or green trees) have greater value for wildlife, will fragment and decay more slowly, and, thus, are likely to last longer. Therefore, in cases where the Permittee has flexibility in selecting dead trees to leave, priority will be given to the largest standing dead trees available, especially large hard or hollow standing dead trees (e.g., western red cedar). When selecting green trees for retention, trees will have greater than 1/3 live crown to increase the likelihood of these trees surviving through the next rotation.

- If an average of three standing dead trees is not available for retention in a harvest unit, the Permittee will substitute live trees (on a 1:1 basis) for the unavailable dead ones. The substitutes shall be from the co-dominant or dominant size class. Preference in selecting substitutes shall be given to Douglas-fir, lodgepole pine, and western red cedar. These trees will serve to provide valuable habitat as live green trees, standing dead (snags), and eventually as large, down wood on the forest floor, to be retained for the term of the Plan.

- If retained standing dead or green trees blow down into the riparian management buffer of the fish bearing stream (tributary of Skook Creek), those structures will be left in place to contribute to fish habitat, and will not require replacement as standing dead structures. On the other hand, the Permittee may salvage standing dead or green recruitment trees that blow down within the Upland area, provided that the structure will be replaced by another standing dead or green recruitment tree at the time of the regeneration harvest of the stand in which it is located. No additional replacement retention trees shall be required for standing dead or green trees that blow down, if the blowdown is not salvaged.

- During regeneration harvest and thinning operations, seedlings and saplings of shade-tolerant trees will be protected and maintained as much as practicable during the harvest operations to hasten the development of multiple canopy layers and mature forest characteristics. Each parcel that has been previously harvested has been planted with a diversity of tree species (up to seven species).

Reforestation of the Tagshinny Tree Farm has included a diversity of tree species chosen to match the species to the site based on minor topographic variation and site moisture conditions on the parcels. Tree species planted on the Permittee's property include Douglas-fir, western red cedar, western white pine (*Pinus monticola*), lodgepole pine, grand fir (*Abies grandis*), ponderosa pine (*Pinus ponderosa*), and on 4 acres of the Home parcel, hybrid poplar, an extremely fast-growing pulp and peeler-log species that is a cross between eastern poplar and native black cottonwood (*Populus*

deltoides x trichocarpa). Because of varying growth rates and architectural characteristics of the conifer species used for reforestation, a diversity of habitats on the tree farm during the 80-year period of the Plan is expected. The mix of species that have been planted, and will continue to be planted on the Permittee's property will also provide a diversity of reliable seed sources to produce natural regeneration of forest tree species over the long-term, as well as provide a valuable source of seed for small mammals and birds, providing a net benefit to the biodiversity of the forest, improve the structural conditions of the forests and provide a food sources for wildlife.

The developing forests on the Permittee's parcels will be managed in a way to form multi-layered, and multi-aged stands that will provide suitable habitat to many wildlife species. The projected harvest for future decades primarily involves commercial thinning and small regeneration harvests that will continue to develop stands of differentiated tree sizes, large trees, and produce a spacing of trees within the forests to provide a diversity of wildlife habitat.

A small (2.0 acre) regeneration harvest is scheduled for the Burchett Road parcel during the first decade (years 2000 - 2010). The Winter Road parcel is scheduled for a regeneration harvest during the second decade (years 2010-2020). Beginning in the third decade (years 2020-2030), other regeneration harvests will be implemented, but these harvests will only be on a small fraction of any particular parcel, and is expected to retain an intact mixed age, structurally complex forest (Appendix B). The low-effect nature of the harvest planned for the Permittee's parcels is viewed by FWS and NOAA-Fisheries as a willingness by the landowners of their commitment to provide fish and wildlife habitat at the same time they are realizing an economic benefit.

b. Steep Slopes

The following special measures apply to the Highway 12 parcel, which has slopes that exceed 70-80 percent, and extend more than 300 feet vertical elevation from top to the bottom. No existing roads currently provide access to the portion of the Highway 12 parcel lying at the base of the hillslope. The Permittee will not build roads to access the parcel from below the slope break. Ground-based equipment may be used on the upper portions of the parcel (above the slope break), but will not be used on portions of the slope below the slope break. Future harvest of this parcel will be done using a cable system (either high-lead or full suspension skyline).

The Permittee will identify any slumping or potential landslide paths on the over-steepened, convex slopes located on the Highway 12 parcel. Aerial photographs indicate the presence of a small slope failure in the southeast section of this parcel, well within a mature, forested buffer. That slope failure area should not be harvested. Areas will be identified on the ground where trees will be retained adjacent to, and within, any landslide-prone zones to provide slope integrity and to minimize the potential for contribution to future hillslope failures. No timber harvest will occur on this parcel during the first 15 or so years of the Plan, except for hand slashing of competing vegetation and pre-commercial thinning to control tree density. At about year fifteen of the Plan (2015), the stand will likely be commercially thinned, if such thinning meets the then-current objectives of the Permittee, and there is a reasonable market value for, small diameter timber. Commercial thinning and regeneration harvesting on the forested hillslope of the Highway 12

parcel will be conducted in a manner similar to past harvest, where yarding was utilized from two landing sites above the hillslope parcel.

If the Permittee wishes to receive technical advice from the Services regarding harvest on the steep portions of the Highway 12 parcel, the Permittee may request the same, and the Services will attempt to provide that advice within ten (10) days of receiving such request.

c. Riparian Forests

The following is a description of the current condition of the streams on the Permittee's property; the current protection provided to the streams; and the intent for future protection. On February 28, 2000, the potentially fish-bearing stream located on the Permittee's Kinzie parcel was surveyed by fish biologists from the Western Washington Fish and Wildlife Office to determine the potential for fish use (Appendix D). This assessment indicated that the tributary of Skook Creek is currently suitable as habitat for coastal cutthroat trout and may provide winter rearing habitat for coho salmon. No salmonids were found in the tributary during a survey conducted in July 1997, as reported by Biologist Gary Davis (Davis 1997), however, this is because the channel was dry.

The seasonal, Skook Creek tributary, flows into and from the wetland, then downstream into Skook Creek which eventually flows into the Cowlitz River. Seasonal flows of the tributary occur between November through May in an average year. Skook Creek flows through a perched culvert downstream of the ownership, therefore, no anadromous fish can currently access the tributary on the Permittee's property. Because the Kinzie parcel is very flat land, the Skook Creek tributary is a very low-gradient stream. This stream flows west approximately 900 feet across the parcel to a small road that runs perpendicular to it, through two small culverts beneath the road, then on for about another 850 feet into the wetland. For this Plan, the lower 850 feet of the Skook Creek tributary will be treated as a fish-bearing stream while the upper 900 feet is considered non fish-bearing. This designation is based on a stream typing assessment conducted by FWS fish biologists on February 28, 2000 (Appendix D).

The tributary is 2 feet in width at its widest east and west of the road before it fans out slightly to 3-4 feet as it enters the wetland. This narrow stream is also shallow; bank height allows it to get to 1.5-2 feet in depth. With higher flows, the stream spreads out temporarily into low-lying areas of the parcel because the land is so flat. The soils in the area are primarily clay, thus, the stream bottom is also clay with no rock substrate. The clay soils make it difficult for trees to grow adjacent to the stream (Site 5 ground) in some areas; the land immediately adjacent to most of the stream is brush-clogged with 4 to 6-foot high willow, salmonberry, rose and dogwood, as well as tall rushes and reed canary grass. As the land rises towards the plantation, the vegetation changes to alder, huckleberry, thimbleberry and vine maple. There is no woody debris in or adjacent to this stream.

Vegetation along the stream in what would be considered the riparian zone is variable in density, height, thickness and species composition. With the road as a reference point, from west to east, the first 50 feet from the road on the non fish-bearing portion consists primarily of reed canary grass and rushes before grading into dogwood, rose, 10-12 feet high willows, and eventually Oregon ash (*Fraxinus latifolia*), red alder (*Alnus rubra*), and black cottonwood (*Populus trichocarpa*). The

vegetation along the non fish-bearing portion of this stream is approximately 30-70 feet wide before it becomes a 7-acre mixed conifer and deciduous stand of trees. From east to west, the fish-bearing portion is vegetated in a similar manner. There are very few conifers older than 10 years within 50 feet of the stream edge. The first 50 feet of stream length from the road is straddled by reed canary grass and rushes. Approximately 50 feet from the road, there is a 100-foot wide clump of ash, oak and aspen 60-80 feet high with some cedar and a shrubby understory 4-8 feet high. At a distance of 200 feet from the road, the deciduous trees thin out and young 8-year old lodgepole pine appear on the north side of the stream. Between 300-500 feet along the stream, scattered young lodgepole pine are present 10-15 feet from the stream. For the next 200 feet of stream length, there are about 15-20 deciduous trees scattered about or in clusters of 2 or 3 within 30 feet of the stream edge. Some young lodgepole pine are present within this 30-foot distance. At a distance of 750-800 feet (50-100 feet from the wetland), there is a clump of deciduous trees similar to the one about 50 feet from the road, described above. The brushy understory is very thick and extends out from the stream, variably for 10-25 feet. Beyond 30 feet from the stream, the land is characterized by upland habitat; residual and planted conifers with huckleberry and swordfern in the understory.

A portion of the Kinzie property was regeneration harvested prior to being purchased by the Permittee; residual overstory trees are approximately 45 years of age. The trees that were retained during the harvest primarily include western red cedar, Douglas-fir, lodgepole pine, oak, and ash ranging from 10-20 inches dbh. In addition, a 7-acre portion of the parcel at the extreme east end of the parcel is uncut, and forested with mature 45 year old mixed conifer and deciduous trees. The portion of the parcel that was regeneration harvested has retained trees scattered in clumps throughout the parcel. Tree density is highest nearest the stream, due to the presence of residual deciduous trees. Tree density varies from 200 TPA at the eastern portion of this parcel (the mixed conifer and deciduous stand) to about 80 TPA along the reach of stream before it enters the wetland. In the harvested portions of the parcel, between the clumps of retained trees and outside of the stream buffer, trees have been planted at a density of approximately 650 TPA, and with the same complement of tree species as the Home parcel. The planted trees are currently 8 years old and in combination with the retained mature trees, a two-aged, multi-storied stand is developing on this parcel.

At the northeast portion of the Winter Road parcel, an unnamed, seasonally intermittent, non fish-bearing stream flows through the parcel for approximately 50 feet. The short reach of this unnamed creek at Winter Road is forested on both sides with mature conifers (Douglas-fir and grand fir) and hardwood trees and shrubs. Although this seasonal non fish-bearing stream will not receive any specific leave-tree prescriptions, the Permittee will clump leave trees during any future harvest at this parcel along the seasonal stream.

Except where indicated, the non fish-bearing streams on the Permittee's parcels, including the man-made ditches on the Home Parcel, will not have prescribed management zone applied to them. Non fish-bearing status will also apply to the portion of the tributary of Skook Creek on the Kinzie Road parcel that is above (to the east of) the two culverts beneath the road passing through this parcel. This primitive road enters the parcel from the north, and is approximately 900 feet from the eastern boundary of the parcel. In the case of the Home parcel, the ditch runs through prairie habitat, and as such, it did not previously have forests growing on them, and it will not require a riparian management zone in the future. Even though no riparian buffer prescriptions have been

developed for non fish-bearing streams on the Tagshinny Tree Farm, the Permittee expects to locate green and dead leave trees from any harvest on these parcels along the stream courses. In addition, a 20-foot equipment limitation zone (ELZ) will be applied to the south side of the non fish-bearing stream on the Kinzie Road parcel to ensure that some stream-side vegetation (reed canary grass, rushes, dogwood, rose, 10-12 feet high willows) continues to provide shade to the stream. Tracked wheeled equipment shall not enter the ELZ, but logs may be removed (yarded) by cable or equipment that can reach into the ELZ.

Where hardwood trees do not compete with or shade out merchantable conifers, they will be left to add diversity to the forest structure. Some hardwoods will be retained to maintain bank stability, to benefit from the added nitrogen they contribute to forest soils, and for improved species diversity. In places where conifers do not become established but hardwoods are successfully growing they will be retained as future merchantable trees.

It is expected that natural regeneration and establishment of hardwoods (red alder, bigleaf maple, and Oregon ash along streams) will occur as it has in the past along the Skook creek tributary. The Permittee has attempted to replace hardwoods where they have become established because conifer species have greater life spans and remain longer as wildlife trees, and have, in the past, had higher market value in commercial forestry. However, the mature hardwoods currently present in clumps in the riparian buffer along the Skook creek tributary will be maintained for 20 to 25 years from the effective date of this Plan, when conifer and hardwood crown closure is expected to occur.

The Highway 12 parcel includes and is adjacent to a permanent Shoreline Buffer on Mayfield Lake, a lake formed by the Cowlitz River, behind Tacoma City Light's Mayfield dam. This buffer is not entirely owned by the Permittee, but is considered a "Shoreline of the State", and it will remain as a mature forest buffer throughout the term of the Permits. Currently the buffer along Mayfield Lake is a minimum of 200 feet wide, in accordance to Washington Shoreline Management Act, RCW 90.58. Forests in the buffer include lowland, old-growth and mature Douglas-fir/western hemlock forest type. This buffer had, in the past, an active, osprey nest in a broken top, old-growth Douglas-fir located approximately 210 feet from the Mayfield Lake shoreline; this tree is on the Tagshinny Tree Farm. This buffer, currently a mature forest, will not be harvested during the term of this Plan. With the growth and retention of large diameter trees, in fairly close proximity to water, this part of the ownership will become more suitable for bald eagle nesting. Lands adjacent to the Permittee's Highway 12 parcel are entirely forested with mature forest stands, although a major State Highway (Highway 12) runs east and west approximately 1/4 mile north of the parcel. Much of the forested land upstream and downstream from the Permittee's parcel, is owned by Tacoma City Light and will remain forested. Together, these land could provide suitable habitat for many of the species covered by this Plan, including eagles and osprey, as well as northern goshawk, spotted owls, pileated woodpeckers, the bat species, and possibly murrelets.

The riparian protection to be applied to the potentially fish-bearing stream accounts for the unique features of this stream and the surrounding landscape; the stream is only 2-feet wide, 2-feet deep, with no bedrock, courses through very flat ground, and flows primarily during winter months, November through May. Future protection and management in the riparian zone along the fish-bearing stream will focus on maintaining properly functioning riparian habitat for this particular stream that may provide suitable habitat for coho salmon and coastal cutthroat trout. As described

below, the riparian zone will be managed to provide shade, litterfall, root strength and bank stability, and the ability to deliver a range of diameters of large woody debris to the riparian zone and stream.

The riparian management zone for the fish-bearing stream will equal 100 feet on each side and will maintain a specified tree density with specific diameter classes of retained trees. The zone will be partitioned into an inner (varied-width) ELZ and an outer managed zone (Table 4). Harvest in the riparian management zone will primarily occur outside of a 30-foot ELZ on the north side and outside a 50-foot ELZ on the south side of the stream. Buffering along the non fish-bearing stream will consist of a 20-foot ELZ on the south side of the Skook Creek tributary. Harvest may occur within the ELZs, however, it will be accomplished using a mechanical harvester that enables tree removal without entering the ELZ. Some hardwood and conifer trees in the ELZ will be retained for stream bank stability. Where timber harvest does occur in the ELZ, trees will be felled away from the stream so that removal may occur without entering the ELZ. Where the mechanical harvester cannot reach trees during harvest operations, trees will be hand-felled and directed away from the stream so that removal may occur without entry by the mechanized equipment into the ELZ. The regeneration harvest of the stand including the riparian management zones is scheduled for the decade 2050-2060. Post-harvest targets for the riparian management zones will include retaining a tree density of greater than 150 trees greater than 8 inches dbh, including a minimum of 8 conifers in excess of 16 inches dbh, per 1,000 feet of stream reach. Provisions for retaining trees in the riparian zones will protect the tree rooting zone, minimize delivery of sediments into the stream, and minimize impacts to shrubs and deciduous trees that contribute to the stream shading, which may create habitat for Oregon spotted frogs, and other riparian dependent species, as well as fish. These riparian management areas are summarized in Table 4.

Table 4. Riparian and wetland protections on Tagshinny Tree Farm parcels.

Aquatic Habitat Type	Buffer Requirement	Buffer width	Retained Tree Density
Fish-bearing	Yes	100 feet managed with 30-foot ELZ on north side and 50-foot ELZ on south side of Skook Creek tributary	150 trees > 8"dbh, w/ a minimum of 8 conifers >16 “dbh, per 1,000 feet of stream
Non Fish-bearing	Yes	Apply a 20-foot ELZ only along the south side of Skook Creek tributary	Permittee will retain wildlife leave trees along non fish-bearing streams
Wetland	Yes	75 feet managed with a 30-foot ELZ	138 trees >8"dbh, 70 of which are >12"dbh, including 10 trees >20"dbh per 1,000 feet of wetland

Flexibility as to how leave trees will be retained within the riparian zone will be based on the objectives of the Permittee. Trees may be evenly distributed or distributed in clumps within the riparian management zone. If trees were distributed evenly, spacing between trees will be large and the development of multi-storied, uneven-aged stands will be hastened. While uneven-aged management harvests may be implemented in the managed riparian buffer, some patches may be opened (thinned) to facilitate establishment of even-aged, Douglas-fir or other shade-intolerant conifers. By clumping retained trees, opportunities for even-aged management, using shade intolerant Douglas-fir for regeneration between the clumps will be maximized. Either option is suitable for providing wildlife habitat and protection to the stream. Leave tree targets will be subject to monitoring. This conceptual approach is one where some flexibility will be incorporated in the process, monitoring will be employed and activities included in annual reports.

In some instances, the Permittee and Services personnel may mutually agree to use natural topographic or vegetative changes to delineate the actual riparian buffer boundary. Because tree roots are needed for bank stability and shading is important, leave trees will be concentrated along stream banks and less so further from streams, in a feathering approach. To protect the microclimate of riparian areas, provide travel corridors, protect water quality, regulate water flow, and help reduce the likelihood of wind-throw, regeneration harvest immediately adjacent to the fish-bearing riparian management zone will be deferred until the stand on the opposite side of the riparian buffer is in the "stem-exclusion" stage (12 to15 years, with 15 years being the maximum).

The fish bearing stream on the Tagshinny Tree Farm does not appear to have experienced any previous channel migration. Moreover, given its small size and low gradient (i.e., low "power"), the confined nature of its channel, the presence of a broad flood plain, and bank materials, the Services and Permittee believe that it is extremely unlikely that any migration of the channel of this stream will occur during the Plan term. When water flows exceed the bankfull width, it appears that water spreads out on the flood plain without cutting a new channel. If, however, that does happen, the Services and Permittee will confer regarding the need to modify the riparian prescription or the riparian management buffers along the stream.

Yarding will be conducted to avoid streams to the maximum extent practicable. No yarding will occur across the potentially fish-bearing stream. However, limited yarding will be allowed across riparian areas of non fish-bearing streams; partial suspension will be permissible but the frequency and width of the yarding corridors shall be minimized to the extent reasonably practicable. Yarding corridors across non fish-bearing streams will not be less than 300 feet apart or greater than 25 feet in width. Except for stream crossings, ground-based equipment will not be used within the ELZ of streams, unless the Services agree in writing to a request from the Permittee showing a reasonable necessity for the deviation.

Where there is a need to access areas across seasonal streams for harvesting that are not currently accessible by roads, the Permittee will construct a skid crossing with permanent culverts, large enough to accommodate the stream flow. Disturbance to a dry stream channel will be minimized to the extent reasonably practicable so as to avoid any sediment inputs into the channel that will move downstream when rainfall and stream flow commences.

The lower 850 feet of the tributary of Skook Creek will be considered fish-bearing. The upper 900 foot portion of the tributary above the two culverts, the man-made ditches at the Home parcel, and the 50-foot stretch that crosses the northeast corner of the Winter Road parcel, are non fish-bearing. Because of the lack of slope stability concerns at the Kinzie Road parcel, it is anticipated that the level of protection that is currently being applied to the 850 foot portion of the tributary will provide a net conservation benefit by improving riparian forest habitat. It is also anticipated that this level of protection will be adequate to provide the elements of properly functioning riparian zones required by the fish species that may occupy this particular stream when flows occur.

d. Wetlands

A 4.3 acre non-forested wetland is located on and adjacent to the 67-acre Kinzie Road parcel. Any harvest near the wetland management zone will utilize directional felling to avoid the wetland as much as practicable. Harvest in the wetland management zone shall only occur between July 1 and October 15 to minimize disturbance to great blue herons when nesting on adjacent lands.

The wetland has a seasonal stream (Skook Creek tributary) emptying into it. To the northeast, the property line lies just outside the wetland edge, i.e. there no open wetland on the Permittee's ownership. However, the northeastern wetland edge is buffered by trees and vegetation along the stream on the Permittee's land. Approximately 50 feet from the wetland along the stream there are scattered deciduous trees (alder and ash) 20-60-feet in height, with a heavy brush understory of rose, willow, rush and dogwood. At about 30 feet from the wetland edge, the vegetation grades into a similar shrub understory but with lodgepole pine and alder about 10 feet in height. This habitat extends out from the stream for about 30 feet before the land becomes more plantation-like with young trees, huckleberry and vine maple. There is a clump of trees at the wetland edge consisting of several alder and 2 tall Douglas fir. The one-acre portion of the wetland on the Kinzie parcel at the southwestern edge of the wetland is buffered for about 75 feet with older trees of variable density (30-50 trees per acre). These trees, which include western red cedar, Douglas-fir, ash and alder ranging from 10-20 inches dbh, are primarily residual overstory trees, approximately 45 years of age, retained from a previous harvest. Young Douglas fir plantation trees start appearing approximately 50 feet from the wetland. Understory vegetation at this end of the wetland consists of salal, swordfern, and vine maple.

The forest adjacent to the Kinzie Road wetland will be managed primarily for timber production, but will provide opportunities for improving wildlife values. A wetland management zone (WMZ) of 75 feet will allow partial harvest adjacent to the wetland, but no equipment will be allowed within 30 feet horizontal of the wetland edge, i.e. a 30-foot ELZ. Within the WMZ, the Permittee will leave after harvest, 138 trees >8"dbh, 70 of which are >12"dbh, including 10 trees >20"dbh per 1,000 feet of wetland perimeter. If these size of trees do not exist, the largest available trees will be retained. Leave trees will be representative of the species composition found within the WMZ, and preference will be to retain conifers when harvested areas are reforested. Trees rooted in the bank will be retained.

As conditioned above, it is expected that timber harvest will not degrade the character of the wetland and will maintain the natural diversity of tree species, including a shrubby understory and a

mix of conifers and hardwoods where appropriate. Harvesting within the WMZ shall leave the WMZ in a condition favorable to future timber production and wildlife conservation. The WMZ buffer is necessary to provide for large trees that may fall into the wetland or the adjacent wetland buffer, maintain microclimate and low water temperatures, provide for cavities adjacent to wetlands, and provide nesting opportunities for great blue heron.

e. Roads

Rocked roads are typically multiple-use and multiple-ownership roads, and are characteristic of all the Permittee's parcels except the Home parcel. The Home parcel road system is solely owned and controlled by the Permittee. No road maintenance agreements exist between the Permittee and adjacent property owners for the multiple-ownership roads, and the Permittee does not have control of use or maintenance responsibilities under this Plan with respect to use by adjacent landowners or others.

Unrocked roads that provide access to the Permittee's parcels will receive very little use on an annual basis; they are restricted to public access and there is little need for the Permittee to use them. These unrocked roads, and the Home parcel road system, will be maintained by the Permittee. Each year, ditches and culverts will be inspected, cleaned, and kept functional according to best management practices. Ground water captured by ditchlines will be diverted onto stable portions of the forest floor by using ditchouts, culverts or drivable dips. The road surfaces will be maintained as necessary to minimize erosion of the surface and the subgrade and minimize direct delivery of surface waters and sediment entry into streams. The Permittee will use un-rocked roads only during dry or frozen road conditions when no rutting or damage will occur to the road surfaces.

No fish passage barriers, mass wasting, stream adjacent parallel roads, seeps and springs, small diameter culverts or orphan roads issues exist on the tree farm road system. These existing roads are expected to continue to provide sufficient access to the parcel and, therefore, no new roads are expected to be constructed. With only minimal use of interior roads by the Permittee over the duration of this Plan and the low gradient conditions that exist, sediment delivery from road surfaces to streams is unlikely.

At the Kinzie parcel, the road that runs perpendicular over the seasonal Skook Creek tributary is flat, narrow, and has vegetation growing between the tires tracks. The road bed is primarily composed of dirt, however, there is a patch of gravel over the culverts to stabilize this area and prevent siltation into the stream. Two culverts were installed in compliance with State standards in the early 1990's which has in the past and will continue in the future to provide adequate water passage during the winter, when flows occur. Because of the extremely low gradient, and the fact that the road runs perpendicular to the stream, is vegetated, and used infrequently, there is very little, if any, sediment delivery to the stream. Maintenance of this interior, unrocked road will be the same as in the past (described above). If any new roads need to be constructed on the Kinzie Road parcel, those roads will be located outside the RMZ.

f. Special Habitats

No special habitats such as caves, cliffs, talus slopes, bogs, seeps or mineral springs are known to occur on any of the Permittee's parcels. Should additional parcels of land containing these special habitats be acquired by the Permittee, and should the Permittee desire to add those lands to this Plan, an amendment will be required to address such special habitats.

g. Nesting Sites of Northern Spotted Owls, Marbled Murrelets or Bald Eagles

The following measures shall apply if nest trees are found to be occupied by northern spotted owls, marbled murrelets or bald eagles.

(i) The nest tree will be protected for 3 years after abandonment.

(ii) Notwithstanding any provisions in the Plan to the contrary, locate the required leave trees around the nest tree, unless impracticable.

(iii) Harvest the stand containing the nest tree as late in the nesting season as economically and operationally feasible. Nesting seasons for these species are as follows: spotted owl, March 1 through August 31; marbled murrelet, April 1 through September 15; and bald eagle, January 1 through August 15.

2. Timing Restrictions

Restrictions of management activities on the Tagshinny Tree Farm will apply to protect the nesting great blue heron near the Kinzie Road parcel. Harvesting within 75 feet of the wetland will be limited to the period between July 15 and October 1.

3. Silviculture Requirements and Guidelines

Forest management activities include stand density control, brush control, thinning, single tree and group tree selection (see description below under thinning) and regeneration harvests according to the schedule in Appendix B.

The Permittee's commitment to grow portions of forest stands until they reach 80 years age will provide larger trees with many characteristics of mature forests. This commitment will produce forests that would not otherwise be found on traditionally managed industrial and privately-owned forest where the rotation age typically is only 40-50 years. By growing trees for an additional 30-40 years, a net conservation benefit will be realized for all wildlife species dependent upon mature forest conditions.

Stand density may be controlled through pre-commercial thinning when stands approach 12 -15 years age. When conducting pre-commercial thinning, the Permittee will attempt to leave a variety of tree species, including Douglas-fir, lodgepole pine, western red cedar, western white pine, grand fir, western hemlock, and ponderosa pine. Where conifer regeneration is lacking, and red alder is present, red alder will be favored. The Permittee will engage in brush control as reasonably necessary the first several years after regeneration harvest areas have been replanted and until the regeneration is established and free-to-grow. After conifers are established and free- to-grow, the Permittee will allow the understory shrubs to develop, to promote canopy layering to improve structural, seed source, and mycorrhizal fungal diversity.

Commercial thinning will usually be implemented approximately 20-25 years after establishment of seedlings following regeneration harvests. Subject to the seasonal harvest restrictions set forth above, the Permittee has the discretion to determine the appropriate time. Commercial thinning may remove trees to leave an evenly distributed stand of trees, or unevenly (randomly) distributed trees to increase structural heterogeneity within the stand, and may be accomplished using single tree or group tree selection, depending on the objective of the Permittee. Single tree selection removes individual trees through the stand during harvest, whereas, group selection removes several trees in a clump, leaving an opening that could be regenerated as an even-age portion of a stand. Subsequent commercial thinning may be implemented each decade until a regeneration harvest is conducted, usually when the stand attains an age ranging from 50-70 years. Each subsequent thinnings after the initial commercial thinning will remove approximately 10-20 percent of the stand volume.

Commercial thinning on any of the tree-farm parcels will remove suppressed, intermediate and co-dominant trees, leaving dominant trees to grow at or near maximum rates. Standing dead trees and future green recruitment trees will be retained at each thinning entry with the intent that they be retained as leave trees during final regeneration harvests.

Stands on the tree farm that have already been commercially thinned will be thinned again during multiple entries, and many of the stands will have a few, scattered individual trees in excess of 80 years old at the time they are scheduled for a regeneration harvest (Appendix B). These stands will have acquired many characteristics of mature forests, including large live trees, large standing dead trees, coarse woody debris on the forest floor in the form of fragmented standing dead trees and cull material left from thinning operations. The stands will also have differentiated into multiple canopy layers, likely with understory vegetation developed to provide foraging areas and cover for small mammals and other migratory birds. Small mammals will be available as prey to spotted owls, if they were to inhabit this forest.

The Home parcel (referred to as Tucker Road on the harvest schedule) has been partitioned into 5 smaller units for the purpose of harvest planning. Based on the Harvest Plan, a commercial thinning operation will be implemented for the first two decades on twelve acres (two units) of currently 45 plus year old second-growth Douglas-fir and lodgepole pine. These forest stands will be entered for a regeneration harvest during the forth decade, from 2030-2040, when the retained overstory trees to be retained will be greater than 80 years of age.

A five-acre stand of hybrid poplar will be commercially thinned for the first two decades and then regeneration harvested in the third decade (2020-2030) when the trees are approximately 20-40 years of age, unless the Permittee chooses to cease poplar production and convert to another tree species (preferably a native species). This stand may, at Permittee's option, be replanted with hybrid popular. These poplar stands will provide a diverse structural component to the forest at the Home parcel, and two rotations will be produced during the term of the Plan, with a third rotation planted in the decade beginning in 2060. During the first rotation of hybrid poplar, dominant trees can be expected to reach more than 100 feet in height, and in excess of 15 inches dbh, considerably taller than conifers of an equal age (Ag Handbook 654 (1990)).

The units at the Home parcel that are currently in the youngest age class (approximately 8 years old conifers) will not be entered until the third decade, when trees are between 23-33 years age. A commercial thinning is scheduled for each decade from 2020 through 2050. In the sixth decade when trees are from 53-63 years of age, one-half (10 acres) of these two units will be regeneration harvested. The second half of this unit will be regeneration harvested when the trees are 63-73 years of age.

The Highway 12 parcel will not be entered until a commercial thinning is implemented during the third decade (beginning in 2020), when the regeneration stand is 23-33 years age. A commercial thinning is planned for each decade from 2020 through 2080. No clear-cutting is planned for this parcel and individual trees will have attained an age in excess of 80 years. In addition to the portion of this parcel that transitions into the Shoreline Management Act buffer, overstory dominant trees will be a minimum of 73 years age, with trees in the Shoreline Management Act buffer in excess of 200 years of age. By the end of the Plan this parcel will have contributed a net conservation benefit for wildlife species dependent upon mature and late-successional forests, including northern spotted owls, marbled murrelet, and bald eagles.

The Kinzie Road parcel has been partitioned into 4 units for forest management purposes. Five of the seven acres in the unit that is currently 45-55 years of age will be commercially thinned during the first two decades, with a regeneration harvest planned for the third decade when the trees are 65-75 years age. The remaining three units will not be entered until the decade beginning in 2020, when a commercial thinning will implemented on the 23-33 years old trees that also have a residual component of 65 plus year old trees. These units will be commercially thinned each decade from 2020 through 2050, when the dominant trees are greater than 50 years of age. In the sixth decade, 40 of the 60 acres in these tree units will be regeneration harvested, trees will be up to 63 years old. The remaining 20 acres of this parcel will be regeneration harvested in the decade from 2060-2070, when the forest may be as old as 73 years and may contain residual, individual trees in excess of 100 years old. A net conservation benefit will be realized for wildlife species by growing these forest to more than 70 years age that would not otherwise have been grown to this age had it not been for this Plan with the Permittee.

Combined, the Home and Kinzie Road parcels constitute 113 of the 144 acres (> 75%) of the forest land managed by the Permittee. These two parcels are also within one mile of each other and likely have the greatest probability to provide habitat and be utilized by late-successional forest wildlife species, such as northern spotted owl and marbled murrelet.

A single commercial thinning is planned for the 6-acre Winter Road during the first decade. When the forest is approximately 55 year age, in the decade beginning in 2010, the entire stand is scheduled to be regeneration harvested (Appendix B).

Multiple commercial thinnings are planned for 8.5 acres of the 10 acre Burchett Road parcel for each decade, starting in the decade of 2010 and continuing until the year 2040, when a regeneration harvest is planned for this portion of the parcel. During the first decade of the Plan, a single regeneration harvest of 1.5 acres is scheduled for this parcel. The small portion of the parcel to be regeneration harvested currently has 50-60 year old trees. The commercial thinning operations planned for 8 of the 10 acres will allow the retained trees to grow at maximum rates for the site, producing large trees in the overstory and allowing an understory to develop that will provide cover and foraging opportunities for forest floor dwelling mammals and migratory birds.

4. Notice to FWS

When the Permittee is aware that a listed species (other than a fish) is occupying habitat on the Tagshinny Tree Farm, the Permittee will give FWS at least 10 days notice before commencing a harvest operation on the occupied parcel. This will provide the FWS with an opportunity to translocate affected individuals of the species, if possible and appropriate. If nests or other signs of occupancy by listed species are observed after harvesting has commenced, the Permittee will notify the FWS within 24 hours, so that the FWS may translocate affected individuals of the species, if possible and appropriate. Such action by the FWS will occur within 24 hours of notification, following which time the Permittee may resume scheduled harvest operations. Permittee will notify the FWS upon discovery of any dead listed species (other than fish) and will, if possible, freeze the animal in a plastic bag for collection by FWS.

5. Changed Circumstances

Changed circumstances means a change or changes in the circumstances affecting a covered species or the Tagshinny Tree Farm (i.e., its habitat) that can be reasonably anticipated by the Permittee and the Services and that therefore can reasonably be, and has been, planned for in the Plan. Changed circumstances are not unforeseen circumstances (as defined in the "No Surprises" regulations) and can include natural or man-caused catastrophic events.

The changed circumstances that can occur with respect to the Tagshinny Conservation Plan include wildfire (natural or man-caused), windstorms, insect infestations, disease outbreaks or other calamities that kill or seriously threaten timber on the Tagshinny Tree Farm. Individual tree mortality that occurs naturally through "competition" between trees as a part of the growth and development of a stand is not intended to be included in the definition of "changed circumstances." However, tree mortality induced by fire, a windstorm, or something above and beyond the death of (usually scattered) individual trees through stand competition will be considered a changed circumstance.

If changed circumstances occur, the Permittee will be permitted to salvage dead and dying trees from the Tagshinny Tree Farm, provided that the Permittee shall continue to adhere to the leave

tree and other requirements of the Plan. In addition, the Permittee and the Services will meet to discuss whether the Harvest Plan then in effect needs to be modified to continue to meet the purposes of this Plan measured from the perspectives of all of the parties to the Plan. If the parties cannot reach agreement on the matter, the Plan may be terminated and the associated permits will thereupon be relinquished or otherwise terminated.

6. Summary of Conservation Measures and Enhancement Activities

- Covered lands will remain in forested condition throughout Plan term.

- Forested habitat greater than 40 years old will run 19% or more throughout Plan and reach much higher levels during portions of the Plan term.

- All existing down wood will be retained.

- During regeneration harvests, all snags that can safely be left will be; no fewer than three wildlife trees per acre (at least 10" dbh) will be left in all cases (unless unavailable, in which case live trees from the dominant size class will be retained as substitutes). Preference will be given to snags 30 feet or taller. Four live trees per acre will be left.

- A 100 foot wide managed buffer will be placed on each side of the fish bearing stream. There will be a variable width equipment limitation zone (30 to 50 feet). Tree density targets in the buffer will be 150 trees greater than 8" dbh with at least 8 conifers greater than 16" dbh per 1,000 linear feet of stream.

- Ground equipment will not be used on steep slopes.

- Where practical, select trees around nests of spotted owls, marbled murrelets and bald eagles, to satisfy leave tree requirements.

- Wetland protections will include a 75 foot wide managed buffer with 30 foot equipment limitation zone. Within the buffer, 138 trees greater than 7" dbh, 70 of which will be greater than 12" dbh (including 10 of which will be greater than 20" dbh), will be retained per 1,000 linear feet of buffer.

- Timing restrictions will apply to nesting blue herons; harvesting within the wetland buffer will be limited to the period between July 15 and October 1.

- Roads under the control of Permittee will be maintained under best management practices; unrocked roads will be used by Permittee only when dry or frozen.

- If nest trees are found to be occupied by northern spotted owls, marbled murrelets or bald eagles, the nest structures will not be harvested until 3 years following abandonment. Harvest

within the occupied stand will be conducted outside the breeding season or as late in the breeding season as feasible.

VI. ASSESSMENT OF CONSERVATION BENEFITS TO COVERED SPECIES

A. Net Benefits from Implementation of the Conservation Measures to ESA-Listed Species Covered Under the Safe Harbor Agreement Element of This Plan

Following is a description of benefits to the listed species covered under this Plan from the conservation measures that will be implemented on the Permittee's property.

Northern spotted owl. Nesting habitat for the northern spotted owl is presently not available on the Permittee's property. However, there are several small stands between 40-60 years of age that could function as roosting and/or dispersal habitat. This is possible because of there structure, and proximity to other older stands near the Permittee's ownership. Other nearby important, late-successional forest tracts can be found on Federal forests at the Mineral Block of the Gifford Pinchot National Forest, located approximately 6 miles north of the Highway 12 parcel, and 15-20 miles northeast of the five remaining parcels. Four hundred acres of lowland, old-growth forests are also found at Lewis and Clark State Park less than two miles from the Home property. Lewis and Clark State Park will remain in perpetuity. With large blocks of forest land nearby and the enhancement activities proposed by the Permittee, suitable habitat for northern spotted owls could be developed and be utilized by owls during the period of the Plan.

The conservation measures provided by the upland forest and steep-slope prescriptions will result in future mature forest conditions suitable to northern spotted owl for roosting and dispersal habitat. Although the parcels comprising the Tagshinny Tree Farm are fairly small and fragmented, they are close to State and Federal blocks of late-successional and old-growth forest with suitable habitat for spotted owls, within a landscape context, and within the average home range of a spotted owl (approximately 2,500 acres in the southern Cascades of Washington). Thus, the forested habitat in the vicinity of the Tagshinny Tree Farm is located such that the property could be used for roosting, foraging and dispersal, and possibly nesting habitat at some locations, over the long term where older trees will be maintained from the outset.

Through this Plan the Permittee will protect, conserve, and develop mature forest habitat and structural conditions that may be suitable for nesting, roosting, and foraging. Currently each parcel owned by the Permittee has forests, or retained portions of forests, with trees in excess of 45 years of age. The amount of each parcel in forest of 45 years of age varies from 100 percent at the Winter Road parcel to about 20 percent of the parcel at the Burchett Road and Kinzie Road parcels. Currently, approximately 2 of 15 acres of the Highway 12 parcel have trees older than 100 years of age. During the term of the Plan many forest stands will have trees in excess of 70 years old, and some residual trees will be greater than 100 years old. Patches with these old, residual trees

are found at the Kinzie Road parcel in the units that were harvested early last decade, these trees occupy approximately 7 acres (~10%) of the parcel.

Currently, 23% of the Permittee's ownership is 40-60 years of age, and 2% is 80 years or older. Throughout the term of the Plan, the Permittee will retain the 2% of trees greater than 80 years old, and will increase the percentage to 5% in the 5th decade of the Plan. Potential roosting, foraging and dispersal habitat will decrease slightly in acreage, from 23% to 17%, but the quality will improve as the stands get older, i.e. the 17% will be in the 60-80 year age class. In subsequent decades, suitable owl roosting and dispersal habitat will always be more than 19%, and in the last 4 decades is expected to be greater than 26%.

The forest management activities proposed by the Permittee emphasizes commercial thinning operations to produce large valuable trees. Commercial thinning using multiple entries serves the objective of producing large trees, in addition to producing older aged stands than what is normally provided on industrial forest lands with 45-50 year rotations, and a multi-layered forest structure with hastened development of understory vegetation that supports the foraging, roosting, and dispersal functions of northern spotted owls. In addition, the Permittee's snag and leave tree strategy has the potential to increase the number of potential nesting and roosting trees, as well as provide and protect potential nest sites for prey species.

The benefits to owls are reflected in the Permittee's commitments to (1) maintain their lands in a forested condition, (2) grow their trees to older-than-normal rotation age classes, (3) retain snags, and leave trees to develop into future snags, (4) retain all down logs in the riparian management zones, (5) implement management actions that protect occupied nest trees, and (6) cooperate with the Service through notification procedures before harvesting near occupied sites. These conservation actions will provide a net benefit to northern spotted owls, and their prey species, from the outset of the Plan because forest stands that normally would be harvested now can be retained for a longer period of time to develop into owl habitat without fear of regulatory restrictions due to owl occupancy.

Marbled murrelet. The conservation measures proposed will protect any habitat and potential nesting structures that may develop and be used by murrelets during the life of this Plan. The intent of the intensive thinning prescriptions that the Permittee has proposed will increase the likelihood of developing large trees with large branches that may support nesting habitat for murrelets. Currently each parcel owned by the Permittee has forests, or retained portions of forests with tree in excess of 45 years old. Two acres on one parcel are greater than 80 years old and will maintained for the term of the Plan; additional acreage will grow to be greater than 80 years old raising the total of this age class to 5%. The forest management activities proposed by the Permittee emphasizes commercial thinning operations to produce large valuable trees with large limbs that have the potential to function as murrelet nest structures. Although the Permittee's stands are patchy, i.e. small in acreage and disjunct, some are large enough to create interior forest with the potential in the latter stages of stand growth to be suitable for murrelets.

The benefits to murrelets and owls are reflected in the Permittee's commitments to (1) maintain their lands in a forested condition, (2) grow their trees to older-than-normal rotation age classes creating larger contiguous patches of older trees, (3) retain and increase the amount of trees greater

than 80 years of age, (4) implement management actions that protect occupied nest trees, and (5) cooperate with the Service through notification procedures before harvesting near occupied sites. These conservation actions will provide a net benefit to marbled murrelets from the outset of the Plan because forest stands that normally would be harvested now can be retained for a longer period of time to develop into murrelet habitat without fear of regulatory restrictions due to murrelet occupancy.

Bald eagle. The conservation measures proposed in the Plan will protect any habitat and nesting structures currently available to bald eagle for nesting, perching and roosting. The implementation of prescriptions for riparian and wetland conservation, as well as retention of some of the oldest trees on the Permittee's ownership, will hasten the development of large live green trees and large standing dead trees that may provide structures for future nesting, perching and roosting by bald eagles.

The old-growth forest habitat along the shoreline of Mayfield Lake will remain as a permanent Shoreline of the State, ensuring that habitat for nesting and perching by bald eagles will always be available. About 2 acres of older forests (>80 years old) are owned by the Permittee that will be retained for the term of the Plan. This acreage will complement an adjacent patch of older trees providing opportunities for eagles to perch, roost, and possibly nest. The entire Highway 12 parcel will receive only commercial thinning operations during the life of the Plan, therefore older trees will always be available for bald eagles, either on the Permittee's parcel or within the Shoreline buffer adjacent to the landowners property. The conservation measures proposed in the Plan will increase the number and distribution of large live trees and large standing dead trees that would likely not be retained on the ownership without this Plan. The Permittee currently is able to harvest these stands and the trees that have the potential to function as eagle habitat but, under the provisions of this Plan, this habitat will be protected.

The benefits to bald eagles are reflected in the Permittee's commitments to (1) maintain their lands in a forested condition, (2) grow their trees to older-than-normal rotation age classes creating larger contiguous patches of older trees, (3) retain and increase the amount of trees greater than 80 years of age, (4) implement management actions that protect occupied nest trees, and (5) cooperate with the Service through notification procedures before harvesting near occupied sites. These conservation actions will provide a net benefit to bald eagles from the outset of the Plan because forest stands that normally would be harvested now, including the 2 acres of old forest on the Highway 12 parcel, can be retained for a longer period of time without fear of regulatory restrictions due to occupancy of the ownership by bald eagles.

B. Permittee's contribution to precluding the need to list covered species of concern under the Candidate Conservation Agreement with Assurances element of this Plan

This section provides an assessment of the effects that the enhancement activities are expected to have on the species of concern covered under the CCAA elements of the Plan.

Coastal cutthroat trout. The conservation measures proposed in the Plan for riparian habitat are designed to provide properly functioning riparian zones along the fish-bearing stream. While this habitat is currently dominated by relatively young forests, the land adjacent to the tributary of Skook Creek and the wetland on the Kinzie Road parcel currently have older trees that will hasten the development of multi-aged forests and complex forest structures that will provide shade, contribute nutrients to the stream through litterfall, have the potential to contribute large wood into the stream, and promote tree and shrub rooting within the riparian zone to minimize the transport of sediments into the stream.

Although the Skook Creek tributary on the Kinzie Road parcel is not currently known to be fish-bearing, the Permittee will protect the majority of the stream as if it was fish-bearing. Under this Plan, management zone 100-foot wide will include a tree density of greater than 150 trees greater than 8 inches dbh, including a minimum of 8 conifers in excess of 16 inches dbh, for each 1,000 feet of stream reach. Trees currently in the fish-bearing stream buffer are approximately 45 years of age. During the term of the Plan, they are expected to reach 125 years of age, thus providing adequate shade and a good source of large woody debris. Tall understory brush will be retained and currently young trees (8 years old) within the riparian zone will grow to provide additional shade to the 2-foot wide stream; shade that is not there now. Additional shade is expected to be provided by the wider 50-foot ELZ on the south side of the stream which will result in more trees being retained near the bank. Sediment input, if any, will be low because the road is used very little, and the gradient is very flat. No large woody debris is currently in the stream or the adjacent riparian zone. As a result of the Permittee's management actions to retain hardwoods in the ELZ, as well as a specified number of conifers in the riparian buffer, the potential for future large woody debris to deliver to the stream will be substantially increased. If other similarly situated landowners were to take similar forest management actions, rather than cutting these riparian zones before they become fish-bearing, the likelihood that these management actions would preclude the need to list coastal cutthroat trout is high.

Oregon spotted frog. This species is the most aquatic native frog found in our region and is nearly always found in or near perennial water bodies such as a spring, pond, lake or sluggish stream (Leonard et al., 1993). The Oregon spotted frog inhabits emergent wetland habitats, such as sedges, rushes and grasses, in forested landscapes, although it is not typically found under forest canopy. Oregon spotted frog habitat includes zones of shallow water and abundant emergent or floating aquatic plants, which are used for basking and escape cover from predators (Leonard et al. 1993; Corkran and Thoms 1996; McAllister and Leonard 1997). Oregon spotted frogs, however, have been found in riparian forests and areas with dense shrub cover (McAllister and Leonard 1997). This species is not an old-growth forest obligate, but forested areas may represent important refugia from further population losses (Blaustein et al. 1995). Historically, this species was also associated with lakes in the prairie landscape of the Puget Sound lowlands (McAllister and Leonard 1997).

The riparian and wetland conservation measures are expected to protect and conserve breeding, foraging and resting habitat for Oregon spotted frog, in the 4.3 acre wetland on the Kinzie Road parcel. Oregon spotted frogs tend to use areas dominated by grass and herbaceous plant communities (Leonard et al. 1993), with a preference for emergent wetland habitat; they are much less likely to use uplands areas dominated by sod-forming, pasture grasses. Much of the vegetation

adjacent to the slow moving stream at the Kinzie Road property is dominated by sedges and rushes, the preferred vegetation type for Oregon spotted frogs.

Within the 75-foot wetland management zone, a sufficient number of trees will be retained to provide shade to the wetland, allow for recruitment of down woody debris into the wetland edge, and result in retention and development of shrubs and other understory vegetation that serve as habitat for the Oregon spotted frog. The voluntary conservation measures prescribed in the Plan will result in the protection and enhancement of wetland habitat on the 1-2 acres of wetland buffer for which the Permittee has control (ownership). The level of protection and quality of habitat being conserved and enhanced would not be available to this species on the landowner's property without implementation of the Plan. Limited distribution and isolation of Oregon spotted frog populations have prompted concern for this species' survival. Loss of wetland habitat (e.g., development, dams) and/or alteration of the character of wetlands (e.g., hydrological modifications) has contributed to their decline. Although the Oregon spotted frog is not currently on the Permittee's ownership, this wetland/stream complex and adjacent vegetation provide conditions that would likely support a small number of this species, if they dispersed to this area or were introduced. Similar actions by adjacent landowners with landscape conditions similar to the Permittees would provide additional habitat that could be used as breeding and dispersal areas, thus contributing to expansion of the population, and possibly precluding the need to list this species in the future.

Van Dyke's salamander. The Van Dyke's salamander is considered to be the most aquatic species of woodland salamander (Leonard et al. 1993); commonly associated with headwater streambank or seep habitats, often in mature and old-growth coniferous forests (WDW 1991; Jones 1998). The species is typically located in the splash zone of creeks under rocks, logs, and wood debris (Leonard et al. 1993). Two nests have been reported for this species: one was inside a partially rotten log alongside a stream (Jones 1989), another was under a moss-covered stone (Nussbaum et al. 1983).

Limited distribution and isolation of Van Dyke's salamander populations have prompted concern for this species' survival. The principal management recommendation of WDW (1991) is the maintenance of riparian corridors along all stream types, but especially Type IV and V Waters.

The only potentially suitable habitat on the Permittee's property is located on the Kinzie Road parcel containing the fish stream and wetland, but also possibly in the old forest located on the Highway 12 parcel, beneath bark on fallen trees. The riparian conservation measures are expected to protect potential breeding, feeding and resting areas of Van Dyke's salamander by maintaining downed logs and habitat near streambanks and the wetland found on the Permittee's property. In addition, the conservation measures proposed for the riparian and wetland zones will provide shade, improve habitat by contributing large wood into the riparian and aquatic environment, and hasten the development of riparian forests on the Kinzie Road parcel. Old forest on the Highway 12 parcel will also be retained which could provide forest floor debris used by Van Dyke's salamander. Although known populations of the Van Dyke's salamander are not currently located in the vicinity of the Permittee's ownership, the Permittee's management actions will provide potentially suitable habitat for Van Dyke's salamander; habitat that would otherwise not be available without the voluntary conservation measures of this Plan. If these actions were replicated by adjacent landowners with similar landscape conditions, larger blocks of additional habitat would be

available for use as breeding and dispersal areas, thus contributing to expansion of the population, and likely precluding the need to list this species in the future.

Northwestern pond turtle. Northwestern pond turtles prefer waters with abundant aquatic vegetation and protected shallow water where juveniles rest and feed under cover. Adult northwestern pond turtles forage in marshes, sloughs, moderately deep ponds, and slow-moving portions of creeks and rivers usually associated with emergent vegetation. Resting habitat includes emergent basking sites such as partially submerged logs, vegetation mats, rocks, and mud banks (Nussbaum et al. 1983). Breeding habitat for this species is primarily located near the margin of a pond or stream, but pond turtles have also been found hundreds of feet from water (Nussbaum et al. 1983). These turtles hibernate in bottom mud of streams or ponds, or on land up to 1,600 ft from water (Ernst and Barbour 1972; Holland 1989). In addition to nesting and hibernation, uplands adjacent to water bodies are utilized by turtles for dispersal and overwintering (Hays et al. 1999). They are known to utilize meadows as well as young seral stages of most forest types including hardwoods, mixed hardwoods, and conifer forests.

Within the 75-foot wetland management zone, the tree density and size to be retained will provide shade to the wetland, potential logs in the wetland, and allow for the development of shrubs and other understory vegetation that serve as habitat for the northwestern pond turtle to haul out from the wetland and retreat into the wetland for protection. The riparian and wetland conservation measures are expected to protect and develop habitat conditions that have the potential to provide for all the northwestern pond turtle's life requisites. The riparian management buffer, with equipment limitation zones, will ensure that the banks remain intact to serve as potential hibernation habitat. Emergent vegetation that is currently present will be retained, and additional vegetation will develop providing foraging opportunities. The riparian conservation strategy also retains all down logs, thus, providing basking and cover sites.

The wetland and slow-moving fish stream will function as breeding habitat, and the mud bottoms of these aquatic bodies provide potential hibernation habitat. The riparian and wetland management zone, as well as the uplands provide of mix of conifers, hardwoods, and young mixed forests that potentially serve as hibernation habitat, as well as dispersal and overwintering habitat.

The voluntary conservation measures prescribed in the Plan will result in the protection and enhancement of riparian and wetland habitat which would not be available to this species on the landowner's property without implementation of the Plan. If similar actions by adjacent landowners were taken, it is possible that the northwestern pond turtle could disperse to or, once present, disperse from the Permittee's ownership. If other similarly situated landowners in this watershed would manage their ownership in a similar manner, additional habitat would be available in larger blocks, allowing the northwestern pond turtle to meet all its life requisites, thus contributing to expansion of the population, and possibly precluding the need to list this species in the future.

Great blue heron. Great blue heron nest colonially in tall deciduous trees or conifer trees near water and disperse to feeding areas. Great blue heron feeding areas can include irrigated agricultural fields, irrigation canals, and the marshy edges of ponds, lakes, and estuarine areas (Smith et al. 1997). Most feeding areas are located within 2.5 to 3 miles of the colony although documented distances

from an active nesting colony to a foraging area range from 13 to 18 miles (Short and Cooper 1985).

Human disturbance has been documented to be a major cause of nest abandonment by great blue herons, causing colony-wide nest failures (Smith et al. 1997). However, herons nesting in different locations may have different tolerance levels to human activity, with colonies located close to human activity responding less to disturbance than those in more remote areas (Simpson 1984).

In the past, great blue herons have occupied the standing dead trees at the edge of the wetland located at the Kinzie Road parcel. However, there has been no observed occupancy by great blue herons in the past 3 years. The wetland on approximately 1-1.5 acres of the Kinzie Road parcel, with numerous mature trees around the perimeter and standing dead trees in the water, is suitable habitat for great blue herons.

The conservation measures proposed for wetland habitat are designed to conserve, maintain, and enhance habitat for great blue heron. Up to 1998, there were several great blue herons nesting in the forest at the edge of the wetland at the Kinzie Road parcel. The live trees and the standing dead trees found within the 75-foot wetland management zone provide protection to the colony and feeding grounds, and provides a favorable winter roosting site. The standing dead and live trees required by the species will be conserved and will remain for the duration of the Plan. Within the 75-foot wetland management zone, tree density will be maintained at 138 trees >8"dbh, 70 of which will be >12"dbh, including 10 trees >20"dbh per 1,000 feet of wetland, where they exist. Where it is appropriate the conifer and hardwood composition will be maintained in addition to conserving shrub understory plants that may be present. These trees will buffer and complement existing trees used in the past by great blue herons, as well as ensure that foraging areas at the wetland edge will remain intact. Additionally, the landowner has agreed to restrict harvest in the vicinity of the wetland to the period of July 1 to October 15 with the intent of minimizing disturbance to nesting great blue herons.

These conservation measures are voluntary actions agreed to be implemented by the Permittee for the purpose of conserving this species. The measures prescribed in the Plan will result in the protection and enhancement of wetland habitat utilized in the past and expected to be utilized again in the future by great blue herons. In addition, the Permittee is taking measures to restrict disturbance protection for nesting herons. Although these conservation measures could be implemented by the Permittee some time in the future, they are not required. Under this Plan, these proactive conservation measures will be implemented for the Permit term. Similar actions by adjacent landowners that result in providing additional wetland nesting, roosting and foraging habitat, as well as providing seasonal restrictions on management activities, would likely contribute to expansion of the population, thus, precluding the need to list this species in the future.

Pileated woodpecker. Pileated woodpecker optimum habitat appears to be conifer stands with more than two canopy layers. West of the Cascade crest, pileated woodpeckers generally breed in forest stands older than 70 years, though they can use younger stands if large snags are present (Mellen et al. 1992). They excavate large nest holes in snags or living trees with dead wood. Nest tree diameters on the Olympic Peninsula ranged from 25 to 45 inches dbh (Aubry and Raley 1992). Typical tree species used as nest sites include Douglas fir, grand fir, and western white pine, where

available, west of the Cascade crest (Bull 1987; Mellen 1987). Most nest trees are hard snags with bark and broken tops (WDW 1991). Pileated woodpeckers also use tree cavities for roosting.

Pileated woodpeckers forage mainly by excavating wood and chipping bark from large-diameter dead and down logs, stumps, snags, and live trees. In a study in Oregon, pileated woodpeckers showed a preference for foraging in forests 40 years or older and in riparian zones (Mellen et al., 1992). Pileated woodpeckers seldom forage in clearcuts, but they are known to feed in timber harvest debris in shelterwood cuts.

Pileated woodpeckers have been observed foraging at both the Home and Kinzie Road parcels, although they are not known to currently occupy nests on any of the Permittee's parcels. Opportunities for foraging exist in the form of standing dead trees which will be protected under this Plan. Forest stands on the property are nearing mature forest age and, as a result of this Plan, will continue to get larger in diameter. Under the provisions of this Plan, the Permittee will grow forest stands beyond the typical 40-45 year rotation, with many stands reaching the 60-80 year age class. Trees of this age and diameter will likely provide opportunities for pileated woodpeckers to create nesting and roosting cavities as these forest stands begin to differentiate and become multi-layered. In addition, the 2 acres of trees 80+ years old on the Highway 12 parcel are large enough to be suitable as potential nest and roost sites. These trees will be retained for the term of the Plan.

The combination of riparian and upland forest conservation measures are expected to provide forest conditions suitable as breeding, foraging, and roosting habitat for the pileated woodpecker. This conservation is designed to conserve current pileated woodpecker nesting and roosting structures and develop mature forest conditions containing large live trees and standing dead trees suitable as habitat.

The conservation of 3 wildlife reserve trees (standing dead trees) and 4 green recruitment trees for every acre harvested will retain structural elements required by pileated woodpeckers for nesting and roosting, both now and in the future. The size and age of trees and standing dead structures retained at harvest will meet the size and age requirements established above to meet the pileated woodpeckers habitat requirements. The conservation measures will improve the number and distribution of standing dead trees on the ownership over time, thus enhancing opportunities for foraging. The riparian habitat conservation strategy contains a provision to retain all down wood in the riparian management zone which have the potential to provide additional foraging opportunities. An additional measure of protection is afforded by the Permittee's commitment to protect from harvest trees that are determined to currently contain pileated woodpecker nests.

This pro-active forest management implemented by the Permittee is expected to provide adequate protection of known nest sites, and an adequate number of potential nesting, roosting and foraging structures such that, should other similarly situated landowners also implement these measures, it would be sufficient to preclude the need to list pileated woodpeckers in the future.

Osprey. Ospreys build large nests in live trees, on dead snags with flat, broken tops, or on artificial nest platforms, always near water (Smith et al. 1997; WDW 1991). Nest trees are typically as tall or taller than surrounding structures. Nests are platforms of sticks at the top of large trees (dbh range from 16-33 inches), generally found within 328 feet of water, although they are occasionally found

in forests. Although nests are generally built near productive water bodies, osprey hunting ranges have been estimated to extend as much as 6 to 9 miles from the nest (Henny 1986; Poole 1987; Sidle and Suring 1986). Ospreys forage in shallow waters of rivers, lakes, reservoirs, estuaries, and salt marsh ponds. This species feeds almost exclusively on live fish captured at the water's surface.

On the Permittee's property, osprey have been resident in old-growth trees found within the shoreline of the state maintained along the shores of Mayfield Lake. Although the most recent nest tree was blown down in the winter of 1999-2000, this buffer zone will be protected and maintained during the 80-year life of the Plan, thus providing potential nesting sites for osprey. No harvesting will be conducted within this zone at any time. The Plan is expected to result in enhanced forest conditions on the landowner's property, adjacent to this shoreline management zone. The forest managed by the Permittee is adjacent and up-slope from the shoreline management zone, and is currently in a young, stand initiation stage with vigorous conifer growth. This parcel has been planted with 3 species of conifers (Douglas-fir, western red cedar, and grand fir) during the past 6 years and will develop into young and mature forests capable of providing a buffer to potential nest trees in the shoreline management zone. Because of the small size of this parcel (~15 acres), and the protected, intact condition of the shoreline management zone, the osprey will benefit from the enhanced condition of the maturing forests on the Permittee's property during the term of this Plan.

The Permittee's contribution to wetland protection by buffering will help maintain the wetland integrity and potential fish habitat. When fish eventually have access to this wetland, the management zone provided by the Permittee will help to provide a potential prey source for osprey. In addition, the trees retained after harvest by the Permittee have the potential to become suitable nest trees for osprey.

If adjacent landowners were to contribute similar protection to wetlands through their forest management regime, and grow their forest stands to older age-class, larger diameter trees suitable for nesting, the cumulative effects would likely preclude the need to list osprey in the future.

Northern goshawk. Austin (1994) found a close correlation between northern goshawks and closed-canopy mature and old-growth forests, however, goshawks have been observed using a variety of forest types. In the Pacific Northwest, goshawks are frequently associated with mature and late-successional conifer forests and are most abundant in old-growth forests (Thomas et al., 1993). However, they have also been reported to nest successfully in young conifer stands (~45 years old) on the middle western slopes of the central Cascades (Beak Consultants 1996, Bosakowski et al. 1999).

On the Olympic Peninsula, nest trees used by northern goshawk ranged from 8 to 58 inches dbh. Where nest trees are available, the home range size is determined by the prey species density (Reynolds et al., 1992). Northern goshawk prey on a variety of small to medium-sized animals including American robin, Stellar's jay, grouse, voles, Douglas squirrel, mountain beaver and snowshoe hare. Prey can be found in a variety of forest types and successional stages and along forest edges.

The combination of conservation measures that provide riparian management zones with old hardwood and mature conifer trees, mature upland stands from 50-80 years old that range from approximately 20% to over 70% of the ownership variously throughout the permit term, as well as the snag and leave tree provisions, are expected to provide forest conditions suitable for northern goshawk breeding, foraging and resting habitat. Conservation measures are expected to produce multi-storied structurally diverse forests through the retention of standing dead and green recruitment trees over 10 inches dbh. Suitable potential nest trees will be available in the mature forest stands, in the riparian and wetland management zones, and in the snag and leave tree retention patches. These forested habitat patches with edge will also be a source of nesting habitat for prey species such as robins, jays, and grouse. Standing hardwood and conifers, as well as downed wood accumulating over time, especially in the riparian and wetland buffer, will provide den and cover structures for mammalian prey species such as voles, squirrels and hares.

These retention and enhancement measures will ensure the development of forest stands with structural diversity suitable for northern goshawk. On all parcels, because of the timing of commercial thinning and regeneration harvest operations, there will be mature forested edges adjacent to early-successional forests that will provide foraging opportunities for northern goshawks that may be nesting in nearby State and Federal old forest stands. If adjacent landowners were to manage their forest lands in a similar manner, there would be even larger blocks of suitable nesting and foraging habitat available of the goshawk, thus likely precluding the need to list this species in the future.

Olive-sided flycatcher. The olive-sided flycatcher inhabits primarily mature forest, old-growth forest, and wet conifer forest, especially those forests with an abundance of snags (Altman 1997; Ehrlich et al. 1988; Sharp 1992). These flycatchers were found to occur in relatively similar abundance in young, mature, and old-growth forest stands in the southern Washington Cascades (Carey et al. 1991; Gilbert and Allwine 1991a; Manuwal 1991; Ruggiero et al. 1991). This species may also use mixed woodlands near edges and clearings. Smith et al. (1997) consider the olive-sided flycatcher an edge species that occurs throughout forested areas where forest stands are adjacent to open areas, such as clear-cuts, burns, montane meadows, and western Washington agricultural areas.

The olive-sided flycatcher currently is not known to be present on the Permittee's property but it is possible given current conditions of the ownership. The conservation measures to protect riparian zones containing hardwood and conifer tree species diversity (mixed woodland component), and promote the development of mature conifer forests with a component of standing dead trees will provide conditions for olive-sided flycatcher breeding, foraging, and resting habitat. The snag and green tree retention measure is suited to enhance habitat for olive-sided flycatcher, especially the provision to provide 2 green recruitment trees greater than 20 inches dbh per every 10 acres harvested, 3 green recruitment trees greater than 14 inches dbh per acre of harvest, and protection of all safe snags. Protection measures for steep-slopes will also contribute to the conservation needs of the olive-sided flycatcher by allowing mature trees to develop within these zones. Considerable edge habitat has been created due to past forest management throughout the ownership of the Tagshinny tree farm. This edge habitat likely benefits the olive-sided flycatcher, where the forested habitat provides breeding and nesting sites, while the adjacent young regeneration forests provide suitable foraging habitat. This mix of younger and older-aged forests, substantially older than most managed forest ownerships (industrial or small, private ownerships),

the riparian habitat protection, as well the provision to protect current snags and leave trees to develop as future snags, provides more abundant and better quality suitable habitat on the Permittee's ownership than would be available without this conservation plan. If other similarly situated landowners were to make these same contributions of habitat suitable for the olive-sided flycatcher, larger blocks of habitat would be available which would likely contribute to maintenance and, possibly, increases in the population. Together, these actions would have the potential to preclude the need to list this species in the future.

Long-eared myotis. Long-eared myotis are generally distributed throughout Washington and have been observed in humid coastal forests to semi-arid grasslands. However, in the drier part of their range they are probably limited to water courses. Long-eared myotis have been found in a variety of habitats such as mature and immature conifer, alder/salmonberry, arid grasslands, and shrub-steppe (Maser et al. 1981; Nagorsen and Brigham 1993). Perkins (1982, 1983) found long-eared myotis in agricultural and riparian areas, oak woodlands, mature conifer forest, Douglas-fir forest (all age classes), and old-growth true fir forest in western and northwestern Oregon. In the southern Washington Cascades and the Oregon Coast Range, Thomas (1988) detected Myotis bats (including long-eared myotis) more frequently in old-growth Douglas-fir forests than in mature and young Douglas-fir forest.

Long-eared myotis are insectivores that prey on moths, flies, beetles, bees, and ants (Whitaker et al. 1977; Whitaker et al. 1981) by aerial foraging and gleaning from foliage. Long-eared myotis use buildings, bridges, rock crevices, pieces of loose bark attached to trees, and snags as day roosts (Maser at al. 1981; Christy and West 1993). Maternity roosts and hibernation sites have been documented in buildings, caves, mines, hollow trees, rock fissures (Cross 1977; Cross and Schoen 1989; Maser et al. 1981; Perkins et al. 1990; Nagorsen and Brigham 1993). Reproductive and non-reproductive females, as well as males and juveniles of both sexes, have been observed to use Douglas fir and western hemlock stumps as solitary roosts (Waldien et al. 2000).

The combination of conservation measures provided for by the riparian and wetland management zones, upland forests, snag and green tree retention, Douglas fir stumps in the clearcuts and near forest edges, and forests on steep-slopes will provide forest conditions suitable for foraging and solitary roosting habitat for the long-eared myotis. Maintaining the integrity of a functional wetland and streams with forested management zones will ensure that quality sources of prey species will be available. These same mixed hardwood/conifer management zones will also be a source of potential roost sites now and in the future. The retention of standing dead trees provides habitat such as loose bark, as well as cavities, that function as potential roost sites for the long-eared myotis. Trees in the mature stands, 50-80 years old, will also be source of roost sites, as occasionally some of these tries develop diseases and slowly die. Such trees will begin to exfoliate, thus providing additional potential solitary roost sites. It is known that conifer stumps, especially Douglas fir and western hemlock, averaging 23 inches in dbh are used by female long-eared myotis as solitary roost sites in the western Cascade Mountain, Oregon (Waldien et al. 2000). Thus, the conifer stumps left after a rotation age harvest (50-80 years) on the Permittee's parcels will also likely provide a source of solitary roosts.

The conservation and management measures to be implemented on the Permittee's property under this conservation plan will result in structurally diverse forest conditions with standing dead, large

green trees, and stumps suitable for roosting by the long-eared myotis. Edge habitat is expected to be available throughout the term of the Plan because regeneration harvests are timed to occur periodically over the next 80 years. These conservation measures and protections, normally not required under current forest practices, will benefit the long-eared myotis, and would likely preclude the need to list this species in the future if other similarly situated landowners were to make similar contributions of suitable habitat for the long-eared myotis.

Long-legged myotis. The long-legged myotis occurs in a variety of habitats such as immature and mature conifer forests, alder forests, and arid range lands (Maser et al. 1981; Nagorsen and Brigham 1993), except for the driest parts of the Columbia Basin (Barbour and Davis 1969; Johnson and Cassidy 1997). Solitary and maternity roosts are located in buildings, bridges, crevices in rock cliffs, fissures in the ground, large snags, and under large pieces of exfoliating tree bark ((Barbour and Davis 1969; Ormsbee and McComb 1998; Nagorsen and Brigham 1993). In Washington, myotis species were detected 2.7 to 5.7 times more often in old-growth forests than in young and mature forests (Christy and West 1993) where roost sites are plentiful.

Foraging habitat includes all seral stages, but there is a preference for young forest (Brown 1985); they also forage over open water (ODFW 1996). The long-legged myotis is insectivorous, with moths, flies, bugs, and beetles forming the bulk of the diet (Whitaker et al. 1977; Whitaker et al. 1981). Thomas (1988) found that feeding rates for Myotis bats (including long-legged myotis) in the southern Washington Cascades and Oregon Coast Range averaged 10 times higher over water than in forest stands.

The combination of conservation measures provided by riparian and wetland management zones, upland forests, snag and green tree retention, and forests on steep-slopes will provide mature forest conditions suitable for foraging and roosting habitat for the long-legged myotis. Maintaining the integrity of a functional wetland, where most foraging occurs, and streams with forested management zones will ensure that quality sources of prey species will be available. These same mixed hardwood/conifer management zones will also be a source of potential roosting and breeding sites now and in the future. The retention of standing dead trees provides habitat such as loose bark, as well as cavities, that function as potential roost sites for the long-legged myotis. Trees in the mature stands, 50-80 years old, as well as the green retention trees, will also be source of roost sites, as occasionally some of these tries develop diseases and slowly die providing the large snags required by female long-legged myotis as day roosts. Such trees will begin to exfoliate, thus providing additional potential solitary roost sites.

The presence of regeneration stands, older forest stands, snags and large green trees, and riparian and wetlands protection will provide a variety of conditions on the Permittee's property suitable for breeding, roosting and foraging for the long-legged myotis. The conservation and management measures to be implemented on the Permittee's property under this conservation plan will result in structurally diverse forest conditions with standing dead and large green trees suitable for use by the long-legged myotis. Edge habitat is expected to be available throughout the term of the Plan because regeneration harvests are timed to occur periodically over the next 80 years. These conservation measures and protections, normally not required under current forest practices, will benefit the long-legged myotis, and would likely preclude the need to list this species in the future if

other similarly situated landowners were to make similar contributions of suitable habitat for the long-legged myotis.

Pacific Townsend's big-eared bat. Townsend's big-eared bat is essentially non-migratory and can occur in nearly any forest type as long as suitable roost, nursery, and hibernation sites are present (WDW 1991). Big-eared bats use caves, mines, buildings, and the undersides of bridges with appropriate temperature and humidity for maternity roosts, day roosts, and hibernation (Christy and West 1993), and are also known to use hollows in standing dead trees and tall stumps on occasion. Townsend's big-eared bats prefer cold areas near the entrance of caves as hibernacula (Barbour and Davis 1969; Humphrey and Kunz 1976). Maternity colonies are normally in caves, and disturbance has been known to cause females to abandon their young. In addition, timber harvest activities around the mouth of a cave may disturb roosting, nursing or hibernating bats, causing them to die or abandon the cave.

Townsend's big-eared bats feed on a variety of insects although its primary prey items are moths (Whitaker et al. 1981) which are obtained both by aerial foraging and gleaning from foliage (ODFW 1992). Townsend's big-eared bats have been observed foraging in upland habitats (forest edges, roads, open areas within the forest) more often than over water (Christy and West 1993).

The combination of conservation measures provided by the riparian and wetlands management zones, the older upland forests, the snag and green tree retention strategy, and forests on steep-slopes will provide forest conditions suitable for foraging, and possibly roosting habitat of Townsend's big-eared bats. This species is capable of using a large range of forest type conditions and it is expected that the conservation measures prescribed in the Plan, at a minimum, will result in numerous foraging opportunities for this species. However, the management regime in this plan grows forest stands from 50-80 years old, 5-35 years older than typical commercial forest stands. These older stands, along with the wildlife and green retention tree strategy, will likely result in potential roosting structures for this bat species. If other similarly situated landowners were to engage in similar forest management practices to contribute what they are capable of for suitable Townsend's big-eared bat habitat, this pro-active management would likely preclude the need to list this species in the future.

Determination. It is expected that the benefits of the specific conservation measures described in this Plan, when combined with those benefits that would be achieved if it is assumed that the conservation measures were also to be implemented on other necessary properties, would preclude or remove any need to list the covered proposed, candidate, and species of concern. "Other necessary properties" are other properties on which conservation measures would have to be implemented in order to preclude or remove any need to list these species.

C. Benefits to species to be covered under the Low-effect HCP elements of the Plan

Steelhead. Steelhead are not currently known to occupy the one potentially fish-bearing stream on the Permittee's property. Threatened Lower Columbia River steelhead spawn and rear in the Cowlitz River, located approximately 1.5 miles south of the Kinzie Road and Home parcels, and

may be resident in Mayfield Lake, adjacent to the Highway 12 property. Mayfield Lake, an impoundment of the Cowlitz River, is a migratory path for adults collected and passed into the lake and upper watershed and for downstream-migrating juveniles. Protections as a the "shoreline of the state" at the Permittee's Highway 12 parcel (approximately 200 ft. wide unmanaged zone) provides protection from sediment delivery into Mayfield Lake, provides litterfall, and has the potential for delivering large woody debris along the bank and shoreline of Mayfield Lake. However, the benefits, or effects, of forest management activities on steelhead or their habitats in Mayfield Lake likely are negligible and can reasonably be expected to be the same under any management alternative considered.

Any fish that get to the Skook Creek tributary will likely benefit from the conservation measures proposed in the Plan, i.e. 100-foot managed buffer with a 50-foot equipment limitation zone on the south side of the stream, will hasten the development of riparian zone habitat which will serve to provide the functions required for healthy fish habitat. Tall understory brush will be retained to provide some shade and currently young trees (8 years old) within the riparian zone will grow to provide additional shade to the 2-foot wide stream; shading that will occur out to 100 feet. Additional shade is expected to be provided by the wider 50-foot ELZ on the south side of the stream which will result in more trees being retained near the bank. Sediment delivery will be low because the road is used very little and water from road surfaces and fill sediments are directed to upland forest floors. No large woody debris is currently in the stream or the adjacent riparian zone. As a result of the Permittee's management actions, the potential for future large woody debris recruitment to the stream will be increased. Without the Plan it is unlikely that the riparian zone habitat would develop to conserve the structural characteristics of a properly functioning riparian zone and fish habitat. Thus, a net improvement in water quality and diversity of in-stream habitats for steelhead, primarily winter-rearing juveniles, may be expected from the management and enhancement actions prescribed and implemented by the Permittee.

Coho salmon. Coho salmon do not presently occupy any habitats within the Plan area. Lower Columbia River/SW Washington coho spawn and rear in the Cowlitz River, located approximately 1.5 miles south of the Kinzie Road and Home parcels. Mayfield Lake, an impoundment of the Cowlitz River, is a migratory path for adults collected and passed into the lake and upper watershed and for downstream- migrating juveniles. Its status as a "shoreline of the state" at the Permittee's Highway 12 parcel (approximately 200 ft. wide unmanaged zone) provides protection from sediment delivery into Mayfield Lake, provides litterfall, and has the potential for delivering large woody debris along the bank and shoreline of Mayfield Lake. However, the benefits, or effects, of forest management activities on coho or their habitats in Mayfield Lake likely are negligible and can reasonably be expected to be the same under any management alternative considered.

Although the Skook Creek tributary on the Kinzie Road parcel is not currently known to be fish bearing, the Permittee will protect the majority of the stream as if it were fish bearing. Now that are provided passage to the Skook Creek tributary, the conservation measures proposed in the Plan will hasten the development of riparian management zones that directly and indirectly influence aquatic habitat quantity and quality (i.e., shade, litterfall, the ability to contribute large wood into the stream, and stream bank stability). Without the Plan, it is likely that riparian zone and aquatic habitats dependent upon them would take longer to achieve properly functioning conditions.

Juvenile coho salmon rearing in the wetland and stream complex are most likely to benefit from management under this Plan.

Under this Plan, riparian management zones 100-foot wide will include a tree density of greater than 150 trees greater than 8 inches dbh, including a minimum of 8 conifers in excess of 16 inches dbh, for each 1,000 feet of stream reach. Trees currently in the fish-bearing stream management zone are approximately 45 years of age. During the life of the Plan, they are expected to reach 125 years of age, thus providing adequate shade and a good source of large woody debris. Tall understory brush will be retained and currently young trees (8 years old) within the riparian zone will grow to provide additional shade to the 2-foot wide stream; shade that is not there now. It is expected that additional shade will be provided by the wider 50-foot ELZ on the south side of the stream, which will result in more trees being retained near the bank. Sediment input, if any, will be low because the road is rarely used, and the gradient is very flat. No large woody debris is currently in the stream or the adjacent riparian zone. The potential for large woody debris recruitment to the stream will be substantially increased through the Permittee's conservation measures.

VII. MONITORING AND REPORTING

A. Monitoring

The Permittee shall monitor implementation of this Plan to determine whether the conservation measures in the Plan are implemented as written, known as compliance monitoring.Monitoring of conservation measures and enhancement activities will be conducted each year that proposed actions are implemented on the Tagshinny Tree Farm to demonstrate compliance with the Plan. Monitoring will include an assessment of the number and size of standing dead trees and green trees to be retained during forest management activities conducted since the previous monitoring report. The monitoring commitments also include a report of the number of acres on which management activities were undertaken since the previous report and what was done -- e.g., acres thinned, acres regeneration harvested, and species replanted on areas subject to regeneration harvest. Monitoring results will be included in the Permittee's annual report. Monitoring need not be done in a year in which no management activities are conducted on the tree farm, provided that monitoring shall in all cases be done in the fourth year following the last year during which management activities occurred on the tree farm or following the year in which the last report was filed, as applicable.

B. Reporting

The Permittee or authorized agent will prepare an annual report to be submitted to the Services' Offices in Lacey, Washington by March 31st of each year that this Plan remains in effect. The report shall cover activities and monitoring conducted during the previous calendar year. However, if no activities are conducted on the Tagshinny Tree Farm during a particular year, then no report

need be filed, provided an annual report must be filed no less frequently than every five (5) years, even if no management activities are conducted.

The annual report will consist of information on timber management activities including number of acres treated, amount of timber removed, the dates of harvest and other management activities, the number of new roads, skid trails, and landings and their maintenance. Additional biological information to be provided includes amount and type of activity in riparian zones, and the occurrence and status of any covered species observed on the ownership. A secondary objective of the report is to assess the condition of the habitat being developed and conserved on the Tagshinny Tree Farm. The report will briefly assess how these actions have benefited the species covered in the Plan. The Services will assist and provide technical assistance, if requested by the Permittee, with the assessment of net benefit to the species. The report will document compliance of the management actions described in section V of this Plan.

VIII. POTENTIAL INCIDENTAL TAKE

A. Potential for incidental take of listed species

The following is an estimate of the level of incidental take of covered listed species that may potentially occupy the Tagshinny Tree Farm at some time in the future, during the Plan term. No listed species are currently known to occupy the Tagshinny Tree Farm. However, because the Permittee is committing through this Plan to grow the forests on tree farm for longer than a typical 50-year rotation, it is conceivable that listed species that require mature forest conditions may occupy the property in the future. Incidental take that may occur in such event would likely be in the form of harm from activities that result in habitat degradation, and/or harassment from activities that cause disturbance of covered listed species. Take in the form of harassment by disturbance could occur on all parcels owned and managed by the Permittee. Commercial thinning will occur in every decade of the Plan term, varying from 29 acres during the decade of 2000-2010, to 110 acres in the decade of 2040-2050. Harm and harassment could occur during regeneration harvests that will also take place during each decade of the Plan, varying from 1.5-2 acres during the decade from 2000-2010 to as much as 55 acres during the decade 2060-2070. During any year that commercial thinning or regeneration harvests occur, the Permittee is likely to perform road maintenance activities that may also disturb listed species. It can also be anticipated that take may occur in the form of harassment when tree planting is conducted following regeneration harvest or commercial thinning operations.

Northern spotted owl. The northern spotted owl generally occupies areas that contain large blocks, spatially distributed among and within stands of late-successional forests. Owls in the western Cascade Mountains of Washington use a median home range size of about 3,500 acres, far in excess of what would be available on the Permittee's property if the entire ownership were in owl habitat. On the Tagshinny Tree Farm, owls may, in the future, find suitable habitat for foraging and dispersal purposes. Because older forest patches are small and dispersed on the tree farm, the probability of an owl pair nesting on the property is low and would require nearby lands for its

primary nesting, roosting and foraging habitat. The greatest opportunity for owl use of the tree farm will be at the Home and Kinzie Road parcels. These two parcels contain 113 of the 144 total acres covered by the Plan; however, they are not contiguous. With a total acreage of 144 acres for all parcels combined, no more than one owl pair could be expected to use the area for roosting and foraging, provided other landowners implemented similar management actions on their ownership. Dispersing juveniles could also use the habitat provided on the tree farm. Incidental take of northern spotted owls, should it occur on the Tagshinny Tree Farm, would be in the form of disturbance associated with timber management activities on an average of once/decade per parcel and harm by degradation of potential roosting, foraging and dispersal habitat when commercially mature forest stands are regeneration harvested.

Marbled murrelet. The best opportunity for developing habitat for Marbled murrelets would be on parcels that currently have mature western hemlock that under the terms of this Plan are expected to develop into large trees with branches large enough to support nesting platforms. The late-successional forests that exist at the Highway 12 parcel and the mature forests found at the Home and Kinzie Road property may develop these characteristics. Take of murrelets, should it occur on the tree farm, would be in the form of disturbance associated with timber management activities and harm by degradation of potential habitat. The Highway 12 parcel includes 12 acres of young forests adjacent to 2 acres of 80+ year old forest on the Permittee's property. No plans for removing the older forest have been proposed, although individual trees may be removed that would degrade the habitat available to murrelets. However, older trees with large branches that may form platforms would be available throughout the term of the Plan. Disturbance may occur in each decade during forest management activities, such as commercial thinning operations that would occur on the 12 acres of young forest positioned on the slope above the older forest that is adjacent to Mayfield Lake, and on the 39 acres of the Home parcel.

Bald eagle. Opportunities for bald eagles to roost and perch are available in the late-successional forest found at the Highway 12 parcel. About two acres of old-growth trees are found on the Permittee's parcel, these older forest are contiguous with a "shoreline of the state" that is administered by Tacoma City Light. Suitable habitat in the form of large, old-growth trees (Douglas-fir, western hemlock, western red cedar and black cottonwood) are present and have the potential to be nest trees. Thus, it is possible that a pair of eagles may potentially occupy this forested shoreline buffer. Eagles may also use some of the dead trees in the wetland and older adjacent trees as perches. Take of bald eagles would be in the form of disturbance when management occurs (on average once/decade) on the Highway 12 parcel adjacent to where eagle roost and perch trees currently exist, and would remain during the term of the Plan. Disturbance may also occur on the Kinzie Road parcel when the stands adjacent to the wetland are managed. Take in the form of disturbance is expected to occur, at most, once per decade at each of these parcels during the term of the Plan.

Steelhead. Steelhead have approximately 850 feet of seasonal stream habitat upstream from the wetland on the Permittee's property at the Kinzie Road parcel. The potential for take of steelhead would be minimal because forested habitat along this stream reach will be enhanced and will be improved over the current condition during the life of the Plan, and it can reasonably be expected that few winter-rearing juveniles and fewer adults would occupy this reach . Take would be in the form of harm that may occur during thinning operations, or during regeneration harvest operations

that will occur on 7 acres of the parcel in the decade from 2020-2030, removing some shade. Additional harm to steelhead may be possible during regeneration harvests planned for 40 acres of this parcel during the time period from 2050-2060, and again on 10 acres during the decade from 2060-2070 which will also remove some shade. However, the impacts from the harvest would be ameliorated by leaving trees in the riparian zone and by the tall understory vegetation that essentially covers the stream that will provide shade and large woody debris. Sediment delivery to the stream is expected to be negligible as road designs, drainage, and topography limit sediment delivery and the ELZ will preclude entry by ground-disturbing harvest equipment to areas directly adjacent to the stream.

B. Potential for adverse affects on proposed and candidate species, and other unlisted species of concern

The following is an estimate of the amount of incidental take expected to occur during the Permit term for unlisted species covered under the Plan (treating such species as listed for the purpose of this evaluation). Take of these covered species would be in the form of harassment and/or habitat degradation, which would occur only in the years when forest management activities are implemented. Except for the great blue heron, osprey, and possibly coastal cutthroat trout and pileated woodpecker, no proposed, candidate, or other species of concern currently are known to occupy the Tagshinny Tree Farm. However, because the Permittee has committed to grow the forests on their property for longer than a typical 50-year rotation it is conceivable that proposed and candidate species and other species of concern may inhabit or continue to inhabit the property in the future during the Plan term.

Coastal cutthroat trout. Coastal cutthroat have approximately 850 feet of stream habitat available above the wetland located on the Kinzie Road parcel. The potential for take of cutthroat trout would be low because currently there are no fish occupying this stream reach, although cutthroat trout may be resident in the wetland on this parcel. Also, forested habitat along this stream reach will be enhanced and improved over the current condition and, thus, functional habitat will be provided for this species. Now that anadromous fish can access the tree farm, it is anticipated that take, in the form of harm, may occur as a result of habitat degradation from thinning the trees in the riparian during regeneration harvest of seven acres in the decade 2020-2030, 40 acres during the years from 2050-2060, and 10 acres harvested during the years from 2060-2070. However, it is expected that stream flows will occur during the winter season when air temperatures are cool, and that the shade provided by the leave trees and under-story vegetation will ameliorate the effects of timber harvest near the stream. Sediment delivery to the stream is expected to be negligible as there is virtually no slope and the ELZ will preclude entry by ground-disturbing harvest equipment to areas adjacent to the stream.

Coho salmon. Coho salmon have only a short reach of available stream habitat for use, similar to the conditions for the coastal cutthroat trout. Because of the historic barrier to fish passage, no coho salmon are currently known to occupy the tributary of Skook Creek on the Kinzie Road parcel. Now that fish passage has been improved and coho salmon can access Skook Creek, it is anticipated that take of coho salmon will be in the form of harm during commercial thinning operations or regeneration harvests that are planned for this parcel; seven acres in the decade 2020-

2030, 40 acres during the years from 2050-2060, and 10 acres harvested during the years from 2060-2070. However, it is expected that stream flows will occur during the winter season when air temperatures are cool, and that the shade provided by the leave trees and understory vegetation will ameliorate the effects of timber harvest near the stream. Sediment delivery to the stream is expected to be negligible as road designs, drainage, and topography limit sediment delivery and the ELZ will preclude entry by ground-disturbing harvest equipment to areas directly adjacent to the stream.

Oregon spotted frog. The Oregon spotted frog may inhabit the sedge and rush habitat found along the shallow banks of the Skook Creek tributary and the wetland at the Kinzie Road parcel. The riparian and wetland management zones include an ELZ which will minimize disturbance at the near-stream and wetland-edge environment. In addition to the mature conifer trees that were retained when the property was harvested earlier this decade, the riparian zone at this parcel is developing into forested habitat. It is anticipated that take of spotted frogs would be in the form of disturbance and may occur during years when harvesting operations are planned for the Kinzie Road parcel, which will result in thinning of trees in the riparian zone and the wetland buffer zone (once per decade). However, the retention of standing trees, all downed trees and logs in the wetland management zone are expected to offset some of these impacts and the level of take.

Van Dyke's salamander. Van Dyke's salamander are never found in great abundance, but may be present in downed logs near the wetland at the Kinzie Road parcel. Take of Van Dyke's salamander would be in the form of disturbance and habitat degradation and would only occur during the year that harvest operations were implemented. It is estimated that take in the form of disturbance would occur, at most, once per decade during the term of the Plan as timber management activities are conducted on stands adjacent to the protected habitat. However, this is expected to be minimal because of the 30-foot ELZ protection, infrequent management events near the wetland, and retention of downed logs in the wetland and riparian management zones.

Northwestern pond turtle. The northwestern pond turtle has approximately 2,500 feet of wetland margin available as habitat. Take would be in the form of disturbance as timber harvest is conducted adjacent to the wetland. However, this impact is ameliorated by the 30-foot equipment exclusion zone at the wetland edge, and the 75-foot managed buffer with specific tree size and composition requirements. Forest management activities are anticipated to occur about once per decade during the term of the Plan, which may cause disturbance to northwestern pond turtles if they inhabit the wetland.

Great blue heron. Habitat for the great blue heron is currently available at the Kinzie Road parcel, although no nesting great blue heron have been observed for three years. No management action is planned for the trees found along the margin of the wetland at the Kinzie Road parcel, therefore habitat will be protected and conserved. It can be estimated that take of the great blue heron would be in the form of disturbance and may occur as much as once a decade, on average, during the term of the Plan as forest management activities such as thinning are conducted on stands adjacent to the wetland.

Pileated woodpecker. Estimated take of pileated woodpeckers would occur only during the year that harvest operations were implemented nearby. The Home and Kinzie Road parcels have the

largest stands of forests and likely will contain the greatest number of standing dead trees and most suitable habitat for pileated woodpeckers. Take would be in the form of disturbance during timber management operations (on average, once/decade) on 46 and 67 acres of the Home and Kinzie parcels, respectively. The Plan calls for protection of any nest trees during harvest operations and retain additional potential nest and roost trees, thus, take in the form of harm is not likely to occur.

Osprey. Osprey may be found at the Kinzie Road property and may potentially nest in trees in the late-successional forest along the shoreline of the state located at the Highway 12 property. Since Highway 12 parcel habitat is expected to be maintained throughout the Permit term, the only take expected to occur would be in the form of disturbance from management activities occurring in the managed portion of this parcel. Take in the form of disturbance may also occur at the Kinzie Road parcel if, in the future, osprey nest in the trees retained in the wetland buffer. It is anticipated that, at most, these stands will be disturbed one time per decade for thinning operations and a one-time regeneration harvest of the adjacent stands during the term of this Plan.

Northern goshawk. It is expected that chances of occupancy of the tree farm by northern goshawks will be low. No more than one pair of northern goshawk would be expected to occupy the Home or Kinzie Road parcel, however, much of the remaining ownership may provide foraging opportunities for goshawks that may nest on nearby State and Federal lands with older forest stands. Take of northern goshawk would be in the form of disturbance to and habitat degradation of nesting goshawks at either of these two parcels during timber management operations. At most, these stands will be disturbed one time per decade for thinning operations and a one-time regeneration harvest during the term of this Plan.

Olive-sided flycatchers. Olive-sided flycatchers may currently find suitable habitat on the Tagshinny Tree Farm because of the high percentage of edge habitat between mature forests and regeneration harvests found on the Permittee's property, the protection of safe snags, and the strategy to provide future snags by retention of 14 and 20-inch green recruitment trees. Therefore, the property may be inhabited by an undetermined number of olive-sided flycatchers. Because the harvest level is low for any given year, take would be in the form of disturbance and habitat degradation that may occur during harvest operations. Take would most likely occur at the Home, Highway 12, Winter Road or Kinzie Road parcels. Harvest operations at each of these parcels is likely to occur, at most, once per decade during the term of the Plan.

Long-eared myotis. Long-eared myotis are most likely to be found at the Kinzie Road, Winter Road, Highway 12 and Home parcels, where suitable trees, grassland habitat, and water is available. Trees with cavities, stumps of adequate size, and sloughing bark are available, or will be available, as habitat for long-eared myotis at the above parcels. Take of long-eared myotis would be in the form of disturbance and degradation of roosting and foraging habitat as these forest stands are thinned and regeneration harvested; each stand receiving approximately one forest management entry per decade for these activities.

Long-legged myotis. Long-legged myotis have the highest likelihood of being found at the Kinzie Road, Winter Road and Home parcels, where the mix of habitat conditions is the greatest, and water is available. The Highway 12 parcel may also provide suitable habitat for the species. Trees with cavities, and sloughing bark are available, or will be available, on these parcels and are likely to

be used by the long-legged myotis. Take of long-legged myotis would be in the form of disturbance and degradation of roosting and foraging habitat as these forest stands are thinned and regeneration harvested; each stand receiving approximately one forest management entry per decade for these activities.

Pacific Townsend's big eared bat. Townsend's big-eared bat are likely to be found foraging at the Kinzie Road parcel. This parcel is in closest proximity to the Cowlitz River where small overhangs, or cave-like features, may occur along the banks of the river providing potential roost sites. Take would be in the form of disturbance and degradation of foraging habitat on the Kinzie Road parcel as it is managed; on average once per decade for thinning and one regeneration harvest.

The FWS has determined that this level of take is consistent with the overall goal of precluding the need to list the species, if it is assumed that conservation measures were also to be implemented on other necessary properties.

IX. TERMINATION CLAUSE

(A) The Permittee may at any time terminate this Plan for good cause (which includes but is not limited to illness or death to family members, financial hardships, other economically profitable ventures, or other reasonable circumstances making it infeasible, in the Permittee's judgment, to continue to implement this Plan) by providing thirty (30) days written notice to the Services. If and when this Plan is terminated, the associated Permits will also be relinquished. Since the Services have determined that the conservation benefits to the species covered under this Plan outweigh the impacts of the Plan at any and all points in time the Plan remains in effect, the Permittee will not be responsible for providing any mitigation following termination of this Plan and relinquishment of the associated permits.

(B) If the Permittee wishes to dispose of lands covered by this Plan, the Permittee will give the Services thirty (30) days written notice and shall indicate in such notice whether the prospective purchaser has indicated an interest in assuming the obligations of the Plan on the parcels being acquired. Upon the closing of the disposition transaction, the lands disposed of will no longer be covered by the Plan and the Permits will be terminated with respect to the disposed lands. A landowner acquiring lands covered by this Plan may receive the coverage and associated ESA assurances if (a) it agrees to continue the terms and conservation provisions of the Plan, (b) the Services agree with the Permittee and acquiring landowner on an allocation of their responsibility to meet the safe harbor baseline requirements (age class percentages) of this Plan, and (c) the Permittee and the proposed transferee comply with the regulations regarding permit transfers that are applicable at the time of the proposed transfer (such regulations currently found at 50 CFR § 13.25 and 50 C.F.R. § 222.305).

(C) If the new landowner does not become a party to the Plan and receive a transfer of the associated permits, the new owner will neither have any responsibilities under the Plan with respect to the parcels acquired nor would such landowner receive any assurances relative to ESA Section 9 restrictions or limitations that might apply to covered listed species. In such case, the safe harbor

baseline percentages of forest age classes shall continue to apply to the remaining covered lands. If, as a result of disposal of part of the covered lands, it is not possible to maintain the safe harbor baseline percentages of forest age classes on the remaining covered lands, the Services and Permittee shall confer and assess whether it is possible to establish an adjusted safe harbor baseline that is consistent with the goals of this Plan and all applicable legal requirements. If either of the Services conclude that such an adjusted baseline is not possible, such Service may terminate its Permit. Likewise, as provided for above, if the Permittee concludes that an adjusted safe harbor baseline is infeasible, the Permittee may terminate the Plan.

X. CHANGED AND UNFORESEEN CIRCUMSTANCES

If, during the term of this Plan, circumstances that are not reasonably foreseeable should occur that dramatically change baseline conditions for species covered by the SHA elements of this Plan (see Table 1), the Permittee agrees to meet with the FWS to discuss implementation of possible alternative conservation measures. Such measures will in no way be considered a requirement of the Permittee or condition of the permit, and the Permittee may, after considering the matter, decline to make any modifications to this Plan.

The assurances listed below are specific to the CCAA and Low-effect HCP elements of the Tagshinny Conservation Plan and associated permits, provided that the Plan is being properly implemented by the Permittee. These assurances apply only with respect to species covered by the CCAA and Low-effect HCP elements of the Conservation Plan and do not apply to the SHA elements of the Plan.

(1) *Changed circumstances provided for in the Plan.* If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and were provided for in the Plan, the Permittee will implement the measures specified in the Plan.

(2) *Changed circumstances not provided for in the Plan.* If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the Plan, the Services will not require any conservation and mitigation measures in addition to those provided for in the Plan without the consent of the Permittee, provided the Plan is being properly implemented.

(3) *Unforeseen circumstances.*

> (A) In negotiating unforeseen circumstances, the Services will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed upon for the species covered by the Plan without the consent of the Permittee.
>
> (B) If additional conservation and mitigation measures are deemed necessary to respond to unforeseen circumstances, the Services may require additional measures of the Permittee where the Plan is being properly implemented, but only if such measures are limited to

modifications within conserved habitat areas (i.e., areas not available for timber harvest or other management activities), if any, or to the Plan's conservation measures for the affected species, and maintain the original terms of the Plan to the maximum extent possible. Additional conservation and mitigation measures will not involve the commitment of additional land, water, or financial compensation, or additional restrictions on the use of land, water, or other natural resources otherwise available for development or use under the original terms of the Plan without the consent of the Permittee.

(C) The Services will have the burden of demonstrating that unforeseen circumstances exist, using the best scientific and commercial data available. These findings must be clearly documented and based upon reliable technical information regarding the status and habitat requirements of the affected species. The Services will consider, but not be limited to, the following factors:

(1) Size of the current range of the affected species;
(2) Percentage of range adversely affected by the Plan;
(3) Percentage of range conserved by the Plan;
(4) Ecological significance of that portion of the range affected by the Plan;
(5) Level of knowledge about the affected species and the degree of specificity of the species' conservation measures under the Plan; and
(6) Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

(4) *Litigation affecting this Section X.*

(A) If and to the extent that any final, unappealable judicial decision or determination, including without limitation the decision of the District Court for the District of Columbia in *Spirit of the Sage Council et al v. Norton et al*, 98-CV-1873 (D.D.C. 2003), holds that any of the Services' "No Surprises" assurances rules (or similar successive rules) as embodied in this Section X were unlawfully included in Plans such as this one, then the provisions of this Section X shall be enforceable only to the degree allowed by any such decision or determination; *provided that* the balance of this Plan shall remain in full force and effect to the maximum extent allowed by law (including without limitation the Permittee's ability to terminate this Plan and relinquishment the Permits under Section IX of this Plan).

(B) In the event that an "No Surprises" assurances rule is vacated, held unenforceable or otherwise enjoined but is later reinstated or re-adopted, the provisions of this Section X shall be automatically re-instated to the maximum extent allowed by such reinstatement or re-adoption and shall apply throughout the full term of this Plan. If such reinstated or re-adopted rule differs from the provisions of this Section X, the Permittee and the Service(s) shall meet and confer in good faith concerning amending this Section X to be fully consonant with such reinstated or re-adopted rule.

(C) Notwithstanding any provision of this Plan to the contrary, the occurrence of any of the matters described in Section (4)(A) of this Section X shall be deemed to constitute "good cause" for

Permittee to invoke its rights to terminate this Plan and relinquish the Permits under Section IX(A) of this Plan.

XI. AMENDMENT PROCEDURES

Amendments to the Plan may be undertaken only if all parties consent in writing. Amendments to the Plan may include, but are not limited to: mapping corrections; language clarifications; adding species; and land additions or dispositions.

When a species not addressed by this Plan becomes listed, proposed for listing, a candidate for listing in the future, or a Service-designated species of concern, the Permittee may request that the applicable Service add the species to the appropriate Permit. The Services will add the species to the Permit within 90 days of receipt of a written request by the Permittee if they determine that all applicable legal requirements have been met; any change to the Plan or amendment to a section 10(a)(1)(A) Permit to include a non-covered species would be subject to the same review process and issuance criteria as the original Plan and Permit. This will include a determination that the species is present, or may be present in the future, as a direct result of the property owner's conservation actions taken under the Plan. Upon this conclusion, the Services will: 1) at the request of the landowner amend the Plan to reflect the status of the species on or near the Permittee's ownership, the baseline conditions if appropriate, and the benefits of the conservation provisions to the species, and 2) review and revise the Permit, as applicable, to address the presence of additional listed species on the property. If it is appropriate to add species that becomes listed, proposed for listing, a candidate for listing, or a Service-designated species of concern, to the Permit, the Services must determine the enhancement or maintenance actions that are being implemented under this Plan by the Permittee which apply to the newly covered species, and provide a net conservation benefit to a listed species, or preclude the need to list a proposed species, candidate species, or a Service-designated species of concern.

The Permittee may request additional lands be added to the area covered by the Permit. The Services may amend the Permit and this Plan to include such lands, after determining that all applicable legal requirements have been met. The Permittee shall submit to the Services a proposal to include additional lands as covered lands accompanied by a map showing the location and boundaries of the additional lands and a complete description of the type of interest acquired, and all relevant baseline conditions. Any new parcels added will be managed according to the terms of the Plan, provided that extension of the Plan provisions will not result in impacts not analyzed and mitigated under the Plan and will not result in unauthorized take under the Federal Permits.

XII. FUNDING AVAILABILITY

The Permittee will provide the funding necessary for the Permittee's implementation of the enhancement activities and conservation measures proposed under this Plan. The activities

proposed are expected to provide the necessary funding through the sale of timber to implement and complete the requirements of the Plan applicable to the Permittee. Appendix C provides an estimate of projected harvest by decade. The primary cost associated with the proposed action is forgone revenue by deferring timber harvest, rather than a direct expenditure or capitalization cost, therefore funding is assured for implementation of the Plan.

XIII. NO MONETARY DAMAGES

No party shall be liable in damages to any other party or other person for any breach of this Plan, any performance or failure to perform any obligation imposed by this Plan, or any other cause of action arising from this Plan. Nothing in this Plan is intended to limit the authority of the Services to seek penalties for violation of law or otherwise fulfill their responsibilities under the ESA.

XIV. COUNTERPARTS EFFECTIVE.

This Agreement may be executed in counterparts.

XV. SIGNATURES

This Agreement, effective and binding on the date of last signature below, is between Tom and Sherry Fox, Gary Davis, Jim and Tricia Murphy, the U. S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service of the National Oceanographic and Atmospheric Administration (NOAA-Fisheries):

Permittees: Tom and Sherry Fox
P.O. Box 311
Ethel, Washington 98542
(360) 978-4305

Tree Management Plus, Inc.
P.O. Box 311
Ethel, Washington 98542

Gary Davis
16001 Meadow Road
Kirkland, Washington 98037

Jim and Patricia Murphy
246 Brockway Road
Chehalis, Washington 98532

Services: The FWS designates the following individual as the Plan Administrator:
Ken S. Berg, Manager
U.S. Fish and Wildlife Service
Western Washington Fish and Wildlife Office
510 Desmond Drive, Suite 101
Lacey, WA 98503
(360) 753-9440

Administrator: NOAA-Fisheries designates the following individual as the Plan Administrator:

Steve Landino
Chief, Washington State Habitat Branch
510 Desmond Drive, Suite 103
Lacey, WA 98503
(360) 753-6054

_____
Thomas R. Fox

_____
Sherry E. Fox

Tree Management Plus, Inc.
By:_____
_____, its President

_____
James Murphy

_____
Trisha Murphy

_____

Gary Davis

_____

Regional Administrator, National Marine Fisheries Service, NW Region,
National Oceanographic and Atmospheric Administration

_____

Chief, Washington State Habitat Branch, National Marine Fisheries Service,
National Oceanographic and Atmospheric Administration

_____

Assistant Regional Director, Region 1
U.S. Fish and Wildlife Service

_____

Manager, Western Washington Office
U.S. Fish and Wildlife Service

XVI. LITERATURE CITED

Altman, B. 1997. Olive-sided flycatcher in western North America. Status review prepared for U.S. Fish and Wildlife Service, Portland, Oregon. 65pp.

Altman, B. 1999. Conservation strategy for landbirds in coniferous forests of western Oregon and Washington. Version 1.0. Prepared for Oregon-Washington Chapter of Partners in Flight. 96pp.

Aubry, K.B., and C. Raley. 1992. Ecology of pileated woodpeckers in managed landscapes on the Olympic Peninsula. U.S. Department of Agriculture, Olympia. Pacific Northwest Research Station annual report.

Austin, K.K. 1994. Habitat use and home range size of breeding northern goshawks in the southern Cascades. M.S. Thesis, Oregon State University, Corvallis.

Barbour, R.W., and W.H. Davis. 1969. Bats of America. University of Kentucky Press, Lexington, Kentucky. 286 pp.

Beak Consultants Inc. 1996. 1996 Northern goshawk surveys of the Mineral Tree Farm, Lewis County, Washington. Multi-species HCP Monitoring Report prepared for Murray Pacific Corporation. Beak Consultants, Inc. Kirkland, Washington. 25 pp.

Bent, A.C. 1963. Life Histories of North American flycatchers, larks, swallows, and their allies. Dover Publications, Inc. New York, NY. 555 p.

Beissinger, S.B and N. Nur. 1997. Population trends of the marbled murrelet projected from demographic analyses. *In*: U.S. Department of Interior. 1997. Marbled murrelet (*Brachyramphus marmoratus*) (Washington, Oregon and California population) Recovery Plan. USDI Fish and Wildlife Service. Portland, Oregon.

Blaustein, A.R., J.J. Beatty, D.H. Olson, and R.M. Storm. 1995. The biology of amphibians and reptiles in old-growth forests in the Pacific Northwest. Gen. Tech. Rep. PNW-GTR-337. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, Oregon. 98 pp.

Bolsinger, C.L. and K.L. Wadell. 1993. Area of old-growth forest in California, Oregon, and Washington. Resource Bulletin PNW-RB-197. Portland, Oregon: USDA Forest Service, Pacific Northwest Research Station.

Booth, D.E. 1991. Estimating prelogging old-growth in the Pacific Northwest. Journal of Forestry (October):25-29.

Bosakowski, T., B. McCullough, F.J. Lapsansky, and M.E. Vaughn. 1999. Northern goshawks nesting on a private industrial forest in western Washington. Journal of Raptor Research 33:240-244.

Bowman, I., and J. Siderius. 1984. Management guidelines for the protection of heroneries in Ontario. Ontario Ministry of Natural Resources. Wildlife Branch, Toronto.

Brown, E.R. (ed.) 1985. Management of wildlife and fish habitats in forests of western Oregon and Washington. U.S. Department of Agriculture, Forest Service, Pacific Northwest Region, and USDI Bureau of Land Management, Publication No. R6-f&WL-192-1985. 332pp.

Bull, E.L. 1987. Ecology of the pileated woodpecker in northeastern Oregon. J. Wildl. Manage. 51:472-481.

Bull, E.L., R.C. Beckwith, and R.S. Holthausen. 1992. Arthropod diet of pileated woodpeckers in northeastern Oregon. Northwestern Naturalist 73:42-45.

Burnham, K.P., D.R. Anderson, and G.C. White. 1994. Estimation of vital rates of the northern spotted owl. *In* U.S. Department of Agriculture and U.S. Department of the Interior. Final Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl. Portland, Oregon. Vol. 2, Appendix, pp. J3-J26.

Butler, R.W. 1992. The Birds of North America, Life Histories for the 21st Century. No. 25.

Calambokidis, J., S. M. Speich, J. Peard, G.H. Steiger, J.C. Cubbage, D.M. Fry, and L.J. Lowenstine. 1985. Biology of Puget Sound marine mammals and marine birds: population, health, and evidence of pollution effects. National Oceanic and Atmospheric Administration Tech. Memorandum NOS. OMA 18.

Carey, A.B., M.M. Hardt, S.P. Horton, and B.L. Biswell. 1991. Spring bird communities in the Oregon Coast Range. Pp. 123-142 *in* L.F. Ruggiero, K.B. Aubry, A.B. Carey, and M.M. Huff (tech. coords.). Wildlife and vegetation in unmanaged Douglas-fir forests. Gen. Tech. Rep. PNW-GTR-285. USDA, Forest Service, Pacific Northwest Forest and Range Station, Portland, Oregon. 533 pp.

Carey, A.B., S.P. Horton, and B.L. Biswell. 1992. Northern Spotted Owls: Influence of Prey Base and Landscape Character. Ecological Monographs 62(2), pp 223-250.

Carey, A.B. and M.L. Johnson. 1995. Small mammals in managed, naturally young, and old-growth forests. Ecological Applications 5(2), pp. 336-352.

Carey, A.B. and K.C. Peeler. 1995. Spotted Owls: Resource and Space use in Mosaic Landscapes. J. Raptor Res. 29(4), pp. 223-239.

Christy, R.E., and S.D. West. 1993. Biology of Bats in Douglas-fir forests. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR General Technical Report PNW-308. 28 p.

Code of Federal Regulations. 1999. 50 CFR 17.22. Permits for scientific purposes, enhancement of propagation or survival, or for incidental taking. U.S. Government Printing Office, Washington, DC.

Corkran, C.C., and C. Thoms. 1996. Amphibians of Oregon, Washington, and British Columbia; a field identification guide. Lone Pine Publ., Edmonton, Alberta, Canada. 175 pp.

Cross, S.P., ed. 1976. A survey of bat populations and their habitat preferences in southern Oregon. A student originated studies project funded by the National Science Foundation. Southern Oregon State College, Ashland, Oregon. 89 pp.

Cross, S.P. 1977. A survey of the bats of Oregon Caves National Monument. Unpubl. Rep. to National Park Service (Contract CX-9000-6-0061). 40 pp.

Cross, S.P., and C. Schoen. 1989. Bats at Oregon Caves: 1988 status report. Unpubl. Rep. to USDA National Park Service. 25 pp.

Davis, Gary S. 1997. Fisheries Assessment Survey for GSS&T. 7pp. September 1997.

Dunlap, D.G. 1955. Inter- and intraspecific variation in Oregon frogs of the genus *Rana*. American Midland Naturalist 54:314–331.

Eagle Act, Protection of Bald and Golden Eagles. 1940. 16USC§668-668d.

Erhlich, P.R., D.S. Dobkin, and D. Wheye. 1988. The birder's handbook: a field guide to the natural history of North American birds. Simon and Schuster, New York, NY. 785 pp.

Ernst, C.H., and R.W. Barbour. 1972. Turtles of the United States. The University Press of Kentucky, Lexington, Kentucky. 347 pp.

Evenden, F.G., Jr. 1948. Distribution of the turtles of western Oregon. Herpetologica 4:201-204.

Franklin, J.F. and C.T. Dyrness. 1973, updated in 1988. Natural Vegetation of Oregon and Washington. Oregon State University Press. Corvallis, Oregon. pp 452.

Franklin, A.B., K.P. Burnham, G.C. White, R.J. Anthony, E.D. Forsman, C. Schwarz, J.D. Nichols, and J. Hines. 1999. Range-wide status and trends in northern spotted owl populations. Unpublished report from Colorado Cooperative Fish and Wildlife Research Unit, United States Geological Survey, Fort Collins, Colorado, and Oregon Cooperative Fish and Wildlife Research Unit, United States Geological Survey, Corvallis, Oregon.

Gilbert. F.F. and R. Allwine. 1991. Spring bird communities in the Oregon Cascade Range. Pp 145-158 *in* L.F. Ruggiero, K.B. Aubry, A.B. Carey, and M.H. Huff (tech cords.) Wildlife and vegetation of Unmanaged Douglas-fir forests. U.S. Forest Service Gen. Tech. Rept. PNW-285

Hamer, T.E., and S.K. Nelson. 1995. Characteristics of marbled murrelet nest trees and nesting stands. *In*: C.J. Ralph, G.L. Hunt, M.G. Raphael, and J.F. Piatt (Tech. eds.), Ecology and Conservation of the Marbled Murrelet. Gen. Tech. Rept. PSW-GTR-152. Albany, California: Pacific Southwest Experiment Station, USDA Forest Service.

Hanson, E., D. Hays, L. Hicks, L. Young, and J. Buchanan. 1993. Spotted owl habitat in Washington. A Report to the Washington Forest Practices Board, Olympia, Washington. 116 pp.

Hayes, M.P. 1994. The spotted frog (*Rana pretiosa*) in western Oregon. Part I. Background. Part II. Current status. Oregon Department of Fish and Wildlife Technical Report 94–1–01.

Hayes, M.P. 1997. Status of Oregon spotted frog (*Rana pretiosa sensu stricto*) in the Deschutes Basin and selected other systems in Oregon and northeastern California with rangewide synopsis of the species' status. Final report prepared for The Nature Conservancy under contract to the U.S. Fish and Wildlife Service, 26000 SE 98th Ave., Suite 100, Portland, Oregon, 97266. 57 pp. plus appendices.

Hayes, M.P. 1998. The Buck Lake Oregon spotted frog (*Rana pretiosa*) population (Spencer Creek System, Klamath County, Oregon). Final report prepared for the Bureau of Land Management and The Nature Conservancy under contract to Winema National Forest. Unpublished Report. 22 pp.

Hayes, D.W., K.R. McAllister, S.A. Richardson, and D.W. Stinson. 1999. Draft Washington State recovery plan for the western pond turtle. Wash. Dept. Fish and Wildl., Olympia, WA. 53 pp.

Henny, C.J. 1986. Osprey (*Pandion haliaetus*). U.S. Army Corps of Engineers Tech. Rep. EL-86-5.

Holland, D.C. 1989. A synopsis of the ecology and current status of the western pond turtle (*Clemmys marmorata*). Unpublished Report. USDI Fish and Wildlife Service, National Ecology Research Center. Fort Collins, Colorado.

Holland, D.C., and R.B. Bury. 1998. The western pond turtle: habitat and history. Report DOE/BP-62137-1, Bonneville Power Administration, Portland, Oregon. 302 pp.

Humphrey, S.R., and T.H. Kunz. 1976. Ecology of a Pleistocene relict, the western big-eared bat (*Plecotus townsendii*) in the southern great plains. J. Mammal. 57(3):470-494.

Johnson, R.E., and K.M. Cassidy. 1997. Terrestrial mammals of Washington State: location data and predicted distributions. Volume 3 *in* Cassidy, K.M., C.E. Grue, M.R. Smith, and K.M.

Dvornich (eds.). Washington State Gap Analysis – Final Report. Washington Cooperative Fish and Wildlife Research Unit, University of Washington, Seattle. 304 pp.

Jones, L.L.C. 1989. *Plethodon vandykei* (Van Dyke's Salamander). Herp. Review 20(2):48.

Jones, L.L.C. 1998. Survey protocol for the Van Dyke's Salamander (*Plethodon vandykei*) Gen. Tech. Rep. PNW- Draft, dated May 13, 1998. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 31 pp.

King, James E. 1966. Site Index curves for Douglas-fir in the Pacific Northwest. Weyerhaeuser Forestry Paper. Weyerhaeuser Company, Forestry Research Center, Centralia, Washington.

Lehmkuhl, J.F. and M.G. Raphael. 1993. Habitat pattern around northern spotted owl locations on the Olympic Peninsula, Washington. J. Wildl. Manage. 57(2), pp.302-315.

Lehmkuhl, J.F., L.F. Ruggiero, and P.A. Hall. 1991 Landscape-scale configurations of forest fragmentation and wildlife richness and abundance in the southern Washington Cascade Range. Pp 425-442. *in* Wildlife and vegetation of Unmanaged Douglas-fir forests. U.S. Forest Service Gen. Tech. Rept. PNW

Leonard, W.P. 1997. Oregon spotted frog (*Rana pretiosa*) monitoring at Trout Lake Natural Area Preserve and vicinity, Klickitat and Skamania Counties, Washington. Unpublished Report, Washington Natural Heritage Program, Washington Department of Natural Resources, Olympia. 22 pp.

Leonard, W.P., H.A. Brown, L.L.C. Jones, K.R. McAllister, and R.M. Storm. 1993. Amphibians of Washington and Oregon. Seattle Audubon Society, Seattle, Washington. 168 pp.

Levenson, H., and J.R. Koplin. 1984. Effects of human activity on productivity of nesting ospreys. J. Wildl. Manage. 48:1374-1377.

Licht, L.E. 1974. Survival of embryos, tadpoles, and adults of the frogs *Rana aurora aurora* and *Rana pretiosa pretiosa* sympatric in southwestern British Columbia. Canadian Journal of Zoology 52:613–627.

Manuwal, D.A. 1991. Spring bird communities in the southern Washington Cascade Range. Pp161-174 in L.F. Ruggiero, K.B. Aubry, A.B. Carey, and M.H. Huff (tech cords.). *In* Wildlife and vegetation of Unmanaged Douglas-fir forests. U.S. Forest Service Gen. Tech. Rept. PNW

Marshall, D.B. 1988. Status of the marbled murrelet in North America: with special emphasis on populations in California, Oregon, and Washington. Audubon Society of Portland.

Maser, C., B.R. Mate, J.F. Franklin, and C.T. Dyrness. 1981. Natural history of Oregon coast mammals. Gen Tech. Rep. PNW 133. USDA Forest Service, Pacific Northwest Forest and Range Exp. Sta., Portland, Oregon. 496 pp.

McAllister, K.R. 1995. Distribution of amphibians and reptiles in Washington State. Northwest Fauna 3:81-112.

McAllister, K.R., and W.P. Leonard. 1997. Washington State status report for the Oregon spotted frog. Washington Department of Fish and Wildlife. Olympia, Washington. 38 pp.

McAllister, K.R., W. Leonard, and R.M. Storm. 1993. Spotted frog (*Rana pretiosa*) surveys in the Puget Trough of Washington 1989-1991. Northwest Naturalist 74:10-15.

Mellen, T.K. 1987. Home range and habitat use of pileated woodpeckers, western Oregon. M.S. Thesis. Oregon State University, Corvallis, Oregon.

Mellen, T.K., E.C. Meslow, and R.W. Mannan. 1992. Summertime home range and habitat use of pileated woodpeckers in western Oregon. Journal of Wildlife Management. Vol 56, No. 1, p. 96-103.

Migratory Bird Treaty Act. 1918. 16USC, pp. 703-712.

Nagorsen, D.W., and R.M. Brigham. 1993. Bats of British Columbia. Royal British Columbia Museum Handbook. University of British Columbia Press, Vancouver, British Columbia. 164 pp.

Nussbaum, R. A., E.D. Brodie, Jr., and R.M. Storm. 1983. Amphibians and reptiles of the Pacific Northwest. University Press of Idaho, Moscow. 332 p.

Oregon Department of Fish and Wildlife. 1992. Sensitive vertebrates of Oregon. Portland, Oregon.

Oregon Department of Fish and Wildlife. 1996. Species at risk; sensitive, threatened and endangered vertebrates of Oregon. Second Edition, June 1996. Oregon Department of Fish and Wildlife, Wildlife Diversity Program, Portland, Oregon.

Ormsbee, P.C. and W.C. McComb. 1998. Selection of day roosts by female long-legged myotis in the central Oregon Cascade range. J. Wildl. Manage. 62(2): 596-603.

Perkins, J.M. 1982. Northwest Oregon bat survey. Contract 82-0-4. Oregon Department of Fish and Wildlife, Nongame Wildlife Prog., Portland, Oregon. 52 pp. plus appendices.

Perkins, J.M. 1983. Bat survey of western Oregon Coos, Lane, Douglas counties in relation to habitat type and age class. Unpubl. Rep., Contract 83-0-08. Oregon Dept. Fish and Wildlife, Nongame Wildlife Prog., Portland, Oregon. 72 pp.

Perkins, J.M., J.M. Barss, and J. Peterson. 1990. Winter records of bats in Oregon and Washington. Northwestern Naturalist 71(2):59-62.

Perry, D.A. 1995. Status of forest habitat of the marbled murrelet. *In*: C.J. Ralph, G.L. Hunt, M.G. Raphael, and J.F. Piatt (Tech. eds.), Ecology and Conservation of the Marbled Murrelet. Gen. Tech. Rept. PSW-GTR-152. Albany, California: Pacific Southwest Experiment Station, USDA Forest Service.

Poole, A.F. 1987. Regulation of osprey (*Pandion haliaetus*) populations: the role of nest site availability. Pp. 227-234 *in* B.U. Meyburg and R.D. Chancellor (eds.). Proceedings third world conf. on birds of prey and owls. Eilat, Israel.

Ralph, C.J., G.L. Hunt, Jr., M.G. Raphael, and J.F. Piatt (Tech. Eds.). 1995a. Ecology and conservation of the marbled murrelet. Gen. Tech. Rep. PSW-GTR-152. Albany, California.: Pacific Southwest Experiment Research Station, USDA Forest Service.

Ralph, C.J., G.L. Hunt, Jr., M.G. Raphael, and J.F. Piatt. 1995b. Ecology and conservation of the marbled murrel Southwest Experiment Station, USDA Forest Service.

Ralph, C.J. and L.L. Long. 1995. Productivity of marbled murrelets in California from observations of young at sea. *In*: C.J. Ralph, G.L. Hunt, M.G. Raphael, and J.F. Piatt (Tech. eds.), Ecology and Conservation of the Marbled Murrelet. Gen. Tech. Rept. PSW-GTR-152. Albany, California: Pacific Southwest Experiment Station, USDA Forest Service.

Raphael, M.G., J.A. Young, and B.M. Galleher. 1995. A Landscape-level analysis of marbled murrelet habitat in western Washington. *In*: C.J. Ralph, G.L. Hunt, M.G. Raphael, and J.F. Piatt (Tech. eds.), Ecology and Conservation of the Marbled Murrelet. Gen. Tech. Rept. PSW-GTR-152. Albany, California: Pacific Southwest Experiment Station, USDA Forest Service.

Reynolds, R.T., R.T. Graham, M.H. Reiser, et al. 1992. Management recommendations for the northern goshawk in the southwestern United States. U.S. Department of Agriculture, Forest Service, Southwestern Region. 184 p.

Ripple, W.J. 1994. Historic spatial patterns of old forests in western Oregon. Journal of Forestry (Nov.):45-49.

Ruggiero, L.F., K.B. Aubry, A.B. Carey, and M.M. Huff (coords.). 1991. Wildlife and vegetation of unmanaged Douglas-fir forests. General Technical Report PNW-GTR-285. U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, Oregon. 533 pp.

Sharp B.E. 1992. Neotropical migrants on national forests in the Pacific Northwest. USDA Forest Service Publ. No. PB93-12885.

Shipe, S.J., and W.W. Scott. 1981. The great blue heron in King County, Washington. Unpublished report to Washington Department of Wildlife, Urban Wildlife Program. Mill Creek, Washington.

Short, H.L., and R.J. Cooper. 1985. Habitat suitability index models: great blue heron. USDI Fish and Wildlife Service, Biological Report 82(10.99), Washington D. C.

Sidle, W.B., and L.H. Suring. 1986. Management indicator species for the National Forest lands in Alaska. Tech Pub. R10-TP-2, USDA Forest Service.

Simpson, K. 1984. Factors affecting reproduction in great blue herons (*Ardea herodias*). M.S. Thesis. University of British Columbia, Vancouver, B.C., Canada.

Smith, M.R., P.W. Mattlocks, Jr. and K.M. Cassidy. 1997. Breeding birds of Washington state: location data and predicted distributions. Vol. 4 *in* Cassidy, K.M., C.E. Grue, M.R. Smith, and K.M. Dvornich (eds.). Washington state gap analysis - final report. Seattle Audubon Society Publication in Zoology No. 1. Seattle, Washington. 538 pp.

Speich, S.M. and T.R. Wahl. 1995. Marbled murrelet populations of Washington - marine habitat preferences and Experiment Station, USDA Forest Service, 420 pp.

Stein, J. and D. Nysewander. 1996. An estimate of marbled murrelet productivity from observation of juveniles on the inland marine waters of Washington State during the 1993 through 1995 post-breeding season. Washington Department of Fish and Wildlife. Olympia, Washington.

Stinson, D.W., J.W. Watson, and K.R. McAllister. 2001. Washington state status report for the bald eagle. Washington Department of Fish and Wildlife, Olympia, Washington. 92 pages.

Teensma, P.D.A., J.T. Rienstra, and M.A. Yeiter. 1991. Preliminary reconstruction and analysis of change in forest stand age classes of the Oregon Coast Range from 1850 to 1940. USDI Bureau of Land Management, Technical Note OR-9.

Thomas, D.W. 1988. The distribution of bats in different ages of Douglas-fir forests. J. Wildl. Manage. 52:619-626.

Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, J. Verner. 1990. A conservation Strategy for the Northern Spotted Owl. USDA Forest Service, Portland, Oregon, U.S.A.

Thomas, J.W., M.G. Raphael, R.G. Anthony, et al. 1993. Viability assessments and management considerations for species associated with late successional and old-growth forests of the Pacific Northwest. U.S. Department of Agriculture, National Forest System, Forest Service Research, Washington, D.C. 530 p.

U.S. Department of Agriculture. 1980. Soil Survey of Lewis county Area, Washington. USDA Soil conservation Service.

U.S. Department of Agriculture. 1990. Silvics of North America. Volume 2. Hardwoods. Agriculture Handbook 654. USDA Forest Service, Washington, DC. 877p.

U.S. Department of Agriculture and U.S. Department of the Interior. 1994a. Record of decision for amendments to Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl. Portland, Oregon.

U.S. Department of Agriculture and U.S. Department of Interior. 1994b. Final Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl. Portland, Oregon.

U.S. Department of Commerce. National Oceanic and Atmospheric Administration. 1999. Endangered and Threatened Wildlife and Plants; Definition of "Harm." Federal Register. Vol. 64:60727. November 8, 1999.

U.S. Department of the Interior. 1992. 50 CFR Part 17. Endangered and threatened wildlife and Plants: Determination of Critical Habitat for the northern spotted owl; Final Rule. Federal Register, Volume 57, No. 10. pp. 1796-1838.

U.S. Department of the Interior. 1990. 50 CFR Part 17. Endangered and threatened wildlife and Plants: Determination of Threatened Status for the northern spotted owl; Final Rule. Federal Register, Volume 55, No. 123. Pp. 26114-26194.

U.S. Department of the Interior. 1992. Endangered and threatened wildlife and plants; determination of threatened status for the Washington, Oregon, and California population of the marbled murrelet; Final Rule. Fish and Wildlife Service. Federal Register Vol. 57:45328. October 1, 1992.

U.S. Department of the Interior. 1996. Endangered and threatened wildlife and plants; final designation of critical habitat for the marbled murrelet; Final Rule. Fish and Wildlife Service. Federal Register Vol. 61:26256. May 24, 1996.

U.S. Department of the Interior. 1997. Marbled murrelet (*Brachyramphus marmoratus*) (Washington, Oregon and California population) Recovery Plan. USDI Fish and Wildlife Service. Portland, Oregon. 171 pp.

U.S. Department of the Interior. 1998. Endangered and threatened wildlife and plants; Notice of 12-month finding on a petition to list the northern goshawk in the contiguous United States west of the 100th Meridian. Federal Register Vol. 63: 35183. June 29, 1998.

U.S. Department of the Interior. 1999. Endangered and threatened wildlife and plants; proposed rule to remove the bald eagle in the lower 48 states from the list of endangered and threatened wildlife; Proposed Rule. Fish and Wildlife Service. Federal Register Vol. 64: 36454. July 6, 1999.

Van Daele, L.J., and H.A. Van Daele. 1982. Factors affecting the productivity of ospreys nesting in west-central Idaho. Condor 84:292-99.

Varoujean, D.H., and W.A. Williams. 1994. Abundance and distribution of marbled murrelets in Oregon and Washington based on aerial surveys. Final Report. MARZET, Marine and Estuarine Research Co.

Vos, K.K., R.A. Ryder, and W.D. Graul. 1985. Response of breeding blue herons to human disturbance in north central Colorado. Colonial Waterbirds 8(1):13-22.

Waldien, D.L., J.P. Hayes, and E.B. Arnett. 2000. Day-roosts of female long-eared myotis in western Oregon. J. Wildl. Manage. 64(3):785-796.

Washington Department of Fish and Wildlife. 1998. Updated list of Endangered, Threatened, and Sensitive species for the State of Washington.

Washington Department of Fish and Wildlife. 1999a. Heritage Database - Wildlife Occurrences. Washington Dept. of Fish and Wildlife. Olympia, Washington.

Washington Department of Fish and Wildlife. 1999b. Priority Habitats and Species List. Washington Dept. of Fish and Wildlife. Olympia, Washington. 32 pp.

Washington Department of Natural Resources. 1993. Washington Forest Practices. Rules -- WAC 222-08-010 *et. seq.*, Board Manual, and Forest Practices Act -- RCW 76.09 *et. seq.*

Washington Department of Natural Resources. 1997. Final Habitat Conservation Plan**.** Olympia, Washington.

Washington Department of Wildlife. 1991. Management recommendations for Washington's priority habitats and species. E. Rodrick and R. Milner (eds.). Wash. Dept. Wildl., Olympia, Washington.

Washington Department of Wildlife. 1993. Status of the western pond turtle (*Clemmys marmorata*). Washington Department of Wildlife, Olympia, Washington.

Watson, J.W., K.R. McAllister, D.J. Pierce, and A. Alvarado. 1998. Movements, habitat selection, and population characteristics of a remnant population of Oregon spotted frogs (*Rana pretiosa*). Annual Progress Report. Washington Department of Fish and Wildlife. 19 pp.

Webb, R.S. and L.S. Forbs. 1982. Colony establishment in an urban site by great blue herons. Murrelet 63(3):91-92.

Whitaker, J.O. Jr., C Maser, and M. Leitschuh. 1977. Food habits of bats of western Oregon. Northwest Science 51:46-55.

Whitaker, J.O. Jr., C Maser, and M. Leitschuh. 1981. Food habits of bats of western Oregon based on stomach and scat analysis. Northwest Science 55:281-292.

Wydoski, R.S. and R.R. Whitney. 1979. Inland fishes of Washington. Univ. of Wash. Press, Seattle. 220 pp.

XVII. APPENDICES

A. Plan Area Map, Legal Descriptions and Area Photos
B. Tagshinny Tree Farm Harvest Plan
C. Tagshinny Tree Farm Forest Age Distribution
D. Memorandum from Mark Ostwald, FWS Fish Biologist, re: stream typing review
E. Letter from Gary Fox (no relation), Century 21, to Gary Davis, Tree Management Plus, Inc.
F. Description of the Skook Creek Barrier Removal Project